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Maintenance

**MAINTENANCE MANAGEMENT OF
AIRCRAFT**

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This instruction implements AFPD 21-1, *Managing Aerospace Equipment Maintenance*. It is the basic Air Force direction for aircraft maintenance management. It provides the minimum essential guidance and procedures for safely and effectively maintaining, servicing, and repairing aircraft and support equipment at the base level. It applies to all Air Force active duty installations and major commands (MAJCOM). Air National Guard (ANG) and US Air Force Reserve (USAFR) units will comply with this instruction to the greatest extent possible as determined by local facilities, equipment, and manning. Waiver authority for this instruction is HQ USAF/LGM. MAJCOMs supplementing this instruction must coordinate their supplements with HQ USAF/LGM.

SUMMARY OF REVISIONS

This revision incorporates IC 2000-1 and adds the following paragraphs to AFI 21-101 to establish policy for maintenance AFSC special experience identifier (SEI) codes. The goal is to improve identification of experienced maintenance personnel, deployment/assignment equity, and maintenance capability. A “|” indicates revised material since the last edition. The entire text of the IC is at the last attachment.

Chapter 1—GENERAL GUIDANCE	5
1.1. Functional Management.	5
1.2. Preventive Maintenance.	5
1.3. Maintenance Concept.	5
1.4. Use of Technical Orders (TO) and Supplements.	6
1.5. Publications.	6
1.6. Contract Aircraft Maintenance.	7
1.7. Aircraft Impoundment.	8

1.8. Certified Mechanics.	8
1.9. Organization.	9
1.10. Requests for Depot Level Assistance.	9
1.11. Maintenance Training.	9

Chapter 2—SCHEDULING AIRCRAFT MAINTENANCE 14

2.1. Wing Plans, Scheduling, and Documentation (PS&D) Section.	14
2.2. Aircraft Generation Planning.	14
2.3. Operational Planning Cycle.	15
2.4. Maintenance Planning Cycle.	15
2.5. Quarterly Scheduling.	16
2.6. Monthly Scheduling.	16
2.7. Monthly Flying and Maintenance Plan.	17
2.8. Weekly Scheduling.	17
2.9. Depot Programs.	19
2.10. Document Management.	19
2.11. TCTO Management.	19
2.12. Time Change Items.	21
2.13. Aircraft Configuration Management (ACM).	21
2.14. Modification Management.	22

Chapter 3—AIRCRAFT GENERATION, REPAIR AND INSPECTION 25

3.1. Responsibilities.	25
3.2. Flying Crew Chief (FCC) Program.	28
3.3. Aircraft Generation.	31
3.4. Debriefing.	33
3.5. Dispatching Personnel and Equipment.	34
3.6. Special Certification Roster (SCR).	34
3.7. In-Process Inspections (IPI).	35
3.8. Inspection Section.	35
3.9. Aerospace Ground Equipment (AGE) Flight.	36

Chapter 4—DOCUMENTING MAINTENANCE 37

4.1. Forms.	37
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4.2. Symbols.	37
4.3. Automated Systems Management.	37
4.4. Records Reviews.	37
4.5. Required Reports.	37
4.6. Automated Products and Formats.	37
Chapter 5—QUALITY ASSURANCE	38
5.1. General.	38
5.2. Quality Maintenance Objectives.	38
5.3. Unit Level Measures.	39
5.4. Responsibilities.	39
5.5. Functional Check Flights (FCFs).	41
5.6. Weight and Balance (W&B) Program.	43
Chapter 6—MAINTENANCE SUPPORT	44
6.1. Decentralized Supply Support.	44
6.2. Ordering Parts.	44
6.3. Tools Issue Sections.	48
6.4. Workcenter Management.	49
Chapter 7—SAFETY	52
7.1. Hazards.	52
7.2. Hazard Abatement Program.	52
Table 7.1. AFOSH Standards.	53
Table 7.2. Air Force Regulations, Instructions, and Technical Orders.	54
7.3. Safety Inspections.	55
7.4. General Safety Guidance.	55
7.5. Flightline Safety.	55
7.6. Workcenter Safety Guidance.	55
7.7. Munitions Safety Guidance.	55
7.8. Flightline Driving.	56
7.9. AFOSH Guidance.	56
7.10. Lockout and Tagout Concept.	56
7.11. Safety Equipment.	56

7.12. Foreign Object Damage (FOD):	57
Chapter 8—WEAPONS STANDARDIZATION, WEAPONS, AND ARMAMENT SYSTEMS FUNCTIONS	59
8.1. Introduction.	59
8.2. Weapons Standardization (WS).	59
8.3. Academic Training.	61
8.4. Practical Training.	62
8.5. Certifying, Decertifying, and Evaluating Load Crews:	63
8.6. Documentation.	64
8.7. Weapons Section.	64
8.8. Transient Aircraft.	68
8.9. Armament Systems Flight.	68
8.10. Forms Prescribed.	70
Attachment 1—GLOSSARY OF TERMS	72
Attachment 2—MAINTENANCE FORMS	77
Attachment 3—SUPPLY REPORTS AND LISTINGS	79
Attachment 4—BASE-LEVEL AUTOMATED MAINTENANCE MANAGEMENT SYSTEMS	81
Attachment 5—OPERATIONAL DEFINITIONS FOR QUALITY MAINTENANCE METRICS	82
Attachment 6—IC 97-1 to AFI 21-101	92
Attachment 7—IC 98-1 TO AFI 21-101, MAINTENANCE MANAGEMENT OF AIRCRAFT	93
Attachment 8—IC 2000-1 TO AFI 21-101, MAINTENANCE MANAGEMENT OF AIRCRAFT	97

Chapter 1

GENERAL GUIDANCE

1.1. Functional Management. HQ USAF/LG oversees aircraft maintenance at all levels, from the maintainers on the flightline and in the back shops through the technicians in depots. The MAJCOM logistics function sets management policy for all maintainers within their MAJCOM. At wing-level, the logistics group commander is the functional manager for all logisticians. As the functional manager, the logistics group commander:

1.1.1. Oversees the career progression of logistics officers and senior noncommissioned officers (NCO) by allocating and assigning logistics officers and NCOs to those positions within the wing requiring a logistics Air Force specialty code (AFSC).

1.1.2. Coordinates on all wing policies affecting maintenance operations.

1.2. Preventive Maintenance. Air Force aircraft require regular upkeep and repair to ensure their continued availability for mission taskings. Each aircraft is designed with a maintenance concept tailored to its operational mission. Built into that concept are specific inspection and servicing requirements which form the basis of a preventive maintenance program. All Air Force units must implement and manage the tasks specified in the scheduled program for their assigned aircraft and associated support equipment (SE). By following that program, aircraft components will operate for a longer time and contribute to the goal of increasing aircraft availability. A conscientious and disciplined approach to preventive maintenance is the best method to meet that goal safely and effectively.

1.3. Maintenance Concept. The Air Force requires varying degrees of maintenance capability at different locations. This capability is described (in order of increasing capability) as either organizational, intermediate, or depot. Since it is not practical to provide the full complement of maintenance capability at each location, establish support based on the following considerations:

- Mission requirements
- Economics of repair
- Transportation limitations
- Component reliability
- Workload agreements
- Facility requirements
- Frequency of tasks
- Special training required

1.3.1. Base-level aircraft maintenance activities must have enough capability to launch and recover aircraft and sustain the preventive maintenance program. Generally, this means most units must possess a full complement of equipment and supplies to perform all types of on-equipment maintenance along with a modest amount of off-equipment maintenance. The Air Force may obtain maintenance capability to repair its aircraft from different sources. These include:

1.3.1.1. In-house (organic) from its operational or support commands.

1.3.1.2. Other military services.

1.3.1.3. Commercial organizations under contract.

1.3.2. Two Level Maintenance. This concept converts Air Force aircraft maintenance for most avionics and engines to Two Levels of Maintenance (2LM) versus the previous Three Levels of Maintenance. This is accomplished using modern communications, computer controls and transportation system initiatives to rapidly move unserviceable parts through the repair process. It has resulted in significant reductions of people, facilities, equipment and spare parts associated with the Intermediate Maintenance shops at "unit" level. Avionics and engine maintenance previously done by the intermediate level is now done either on the flightline or in depot repair shops. Under 2LM depot repair becomes tied directly to the Air Force flightline and unit sortie generation capabilities. Readiness is maintained by improving pipeline processes, moving reparable to depot repair centers using high velocity parts movement, and state of the art communications/computers for visibility and control of assets. Lastly the concept enables a significant reduction in the aircraft maintenance mobility footprint.

1.3.3. Lean Logistics. Lean Logistics is an Air Force initiative focused on improving logistics support processes by applying "best business practices" across wholesale and retail logistics functions to reduce inventories and costs and improve mission capability. It is an outgrowth of the 2LM program focusing on rapid depot repair and high velocity two-way movement of parts. Best business practices include maximum use of express carriers, expedited processing of reparable by bases to the depot, flexible and responsive repair processes that sustain quality repair, quick response contracts (both depot repair and bit and piece support), and more direct user involvement in spares distribution decisions to achieve optimum support. Lean logistics creates a system where all segments of logistics are optimized and integrated resulting in an efficient and effective infrastructure to support Air Force weapon systems in war and peace.

1.4. Use of Technical Orders (TO) and Supplements. For a solid aircraft maintenance program use the technical data prescribed for that equipment. Units performing aircraft maintenance must:

1.4.1. Strictly enforce adherence to TOs and supplements.

1.4.2. Establish and manage TO and supplement programs according to TO 00-5-1, *Air Force Technical Order System*, TO 00-5-2, *Technical Order Distribution System*, and AFI 37-160, volume 1, *Air Force Publications and Forms Management Programs--Developing and Processing Publications*.

1.4.3. Recommend improvements or corrections to deficient TOs.

1.4.4. Ensure availability of required TOs and supplements in workcenters.

1.4.5. Continually assess the currency, adequacy, availability, and condition of their TOs and supplements.

1.4.6. Establish procedures for shipping TOs and supplements to support mobility requirements.

1.5. Publications. This instruction is not meant to be all-inclusive. Besides the additional guidance MAJCOMs publish in supplements to this instruction, units must tailor procedures to the unique aspects of their own maintenance operation. Publish directives (instructions, supplements, and, for functional areas, operating instructions according to AFI 37-160, volume 1) for areas where more detailed guidance or specific procedures will ensure a smooth and efficient operation. Adhere to the following procedures:

- 1.5.1. Do not publish unit directives to change or supplement TOs.
- 1.5.2. For directives that apply to both the operations and logistics groups, the organization controlling the majority of functional areas covered in the instruction publishes it.
- 1.5.3. Coordinate directives with all appropriate unit agencies.

1.6. Contract Aircraft Maintenance. This section spells out the various responsibilities for managing contract maintenance.

1.6.1. HQ USAF/LGM Responsibilities:

- 1.6.1.1. Air Force logistics focal point for all functional and technical matters pertaining to contract aircraft maintenance.
- 1.6.1.2. Establishes and approves policies and procedures for direction and management of contract aircraft maintenance.
- 1.6.1.3. Air Force logistics focal point for all interservice and interagency matters pertaining to contract aircraft maintenance.
- 1.6.1.4. Ensures requirements for measurement, documentation, and reporting of contract aircraft maintenance performance exist.
- 1.6.1.5. Evaluates the efficiency and effectiveness of MAJCOM contract aircraft maintenance management.
- 1.6.1.6. Ensures policies and procedures contain provisions for continuation of required operation and services in the event of disruption, termination, or default of contract aircraft maintenance.

1.6.2. MAJCOM Responsibilities:

- 1.6.2.1. Designates focal points for organizational, functional, and technical questions pertaining to each contract aircraft maintenance program.
- 1.6.2.2. In addition to the metrics required in [Chapter 5](#) specifies measurement areas and standards of performance required for aircraft, systems, and equipment supported by contract maintenance.
- 1.6.2.3. Specifies the forms, methods of documentation, and frequency of reporting used to assess contract maintenance.
- 1.6.2.4. Identifies the qualifications, training requirements and responsibilities for quality assurance evaluators (QAE) and quality assurance representatives (QAR) for each contract aircraft maintenance program.
- 1.6.2.5. Develops procedures for support of continuing operations in the event of disruption, termination, or default of contract aircraft maintenance.
- 1.6.2.6. Ensures units with assigned QAEs meet requirements of AFI 63-504, *Quality Assurance Evaluator Program*.
- 1.6.2.7. Ensures units with assigned QARs meet requirements of AFI 21-127, *Quality Assurance Representative Program*.

1.6.3. Unit Responsibilities:

1.6.3.1. Designates a focal point for all functional, technical, and quality assurance matters pertaining to contract aircraft maintenance.

1.6.3.2. Ensures the organizational relationship, physical location, , and lines of communication between the QAE/QAR, contracting officer, and the contractor performing contract aircraft maintenance, promote efficiency and continuity of operations.

1.7. Aircraft Impoundment. Senior maintenance managers may impound aircraft when their condition requires care in handling. Use the following guidelines:

1.7.1. Impound aircraft with unusual operating performance or system malfunction.

1.7.2. Establish local procedures for aircraft impoundment and home station notification.

1.7.3. Assess the aircraft's condition. Determine need and authorize a "one-time flight" according to TO 00-20-1 if necessary.

1.7.4. Flight Control Malfunctions. Arrange special care to completely diagnose and correct flight control malfunctions. To ensure proper handling, units shall publish directives that address as a minimum:

1.7.4.1. Team and individual integrity to provide continuity when troubleshooting major flight control malfunctions.

1.7.4.2. Skill-level, experience, and training requirements of team members and individuals assigned to work major flight control malfunctions.

1.7.4.3. Requirements for use of checklists to document sequence of actions.

1.7.4.4. Procedures for managing repeat and recurring discrepancies, uncommanded inputs reportable under the provisions of AFI 91-204, *Investigating and Reporting Mishaps*, and problems occurring in the direct manual mode or occurring where the auto mode fails to disengage.

1.7.4.5. The process for reviewing and clearing red X discrepancies related to flight control malfunctions and impoundment.

1.8. Certified Mechanics. MAJCOMs may develop procedures for identifying and certifying top maintenance performers. The intent is to create an environment for continuous improvement by placing responsibility, accountability, and ownership at the appropriate working level. Empowering these individuals facilitates the production effort. Comply with the following requirements to certify maintenance personnel identified as highly responsible.

1.8.1. Qualifications. A certified mechanic may be any 5-, 7-, or 9-skill level individual who demonstrates excellence and quality in workmanship. MAJCOMs establish all required general knowledge, task knowledge, and applicable skill training for certification. Individuals demonstrate task proficiency to their first-line supervisor prior to certification for a specific task. First-line supervisors may only nominate individuals fully qualified in MAJCOM defined criteria. MAJCOMs establish criteria for two levels of certification: certified mechanic (CM) and certified master mechanic (CMM).

1.8.2. CM and CMM Certification Process. First-line supervisors task certify individuals, document tasks, and recommend nominees for certification by sending their names to the flight or section chief. Units develop a documentation format and procedures for sending nominations. As a minimum, follow this process:

1.8.2.1. The squadron maintenance officer (SMO), maintenance supervisor (MS) and/or superintendent interview nominees to ensure they fully understand responsibilities associated with CM or CMM certification. A listing of satisfactory nominees is then sent to the squadron commander.

1.8.2.2. The squadron commander reviews the nominee packages, and with his/her concurrence, forwards them to the logistics group commander for approval. On approval, a certification package is prepared for the wing commander's signature.

1.8.2.3. Workcenter supervisors insert the signed certification document in technicians' training records.

1.8.2.4. Enter all CMs and CMMs on the special certification roster.

1.8.3. CM and CMM Certification Review Board. CMs and CMMs nominated by their first-line supervisor for certification status, must meet a squadron certification review board. As a minimum, the board reviews practical evaluation results, individual qualifications, and experience. The board either concurs with certification or informs the first-line supervisor of deficient areas and additional required training.

1.8.4. CM and CMM Privileges. The CM signs off his or her own work, including red Xs, but is limited to tasks in their primary AFSC. The CMM signs off a spectrum of tasks, including red Xs, not limited to their primary AFSC. CMs and CMMs may work unsupervised and do not require follow-up inspection. They inspect and clear all tasks they complete and are certified to sign off. A CM and CMM cannot clear in-process inspections (IPI) identified in the TO, job guide, MAJCOM or unit supplement or other directive by themselves. A second IPI-qualified individual must perform this task.

1.8.5. CM and CMM Supervisor Responsibility. The first-line supervisor enforces strict compliance with established technical data. Compliance with that data is the basis supervisors use to certify or decertify CMs and CMMs. Once a year, the supervisor reviews the qualifications of each CM and CMM. The supervisor must ensure the member's proficiency in every certified area and schedule additional training as necessary. If additional training is required, the supervisor initiates a period of decertification. Deterioration in the quality of work and questionable reliability are grounds for decertification. Review qualifications and experience of CMs and CMMs who move between organizations. The supervisor recertifies members upon completion of training or resolution of decertification and unacceptable conditions. Supervisors ensure CM proficiency by directly observing maintenance actions performed by CMs. Use the individual training record to document certification, decertification, training, and annual certification review of each individual. Training managers and supervisors arrange and schedule training for the CM and CMM program. Training management monitors and reports program status to group and squadron commanders.

1.9. Organization. Units organize themselves according to AFI 38-101, *Air Force Organization*. Follow the procedures in that instruction for requests to deviate.

1.10. Requests for Depot Level Assistance. TOs 00-20-14, *AF Metrology and Calibration Program*, and 00-20-107, *Maintenance Assistance*, outline procedures for requesting maintenance assistance beyond the capability of the unit level.

1.11. Maintenance Training. The capability of any unit depends on the state of training for both aircrew and maintenance personnel. Since maintenance training is an essential element of improving and

sustaining unit capability, it must receive priority treatment by squadron commanders and maintenance supervisors. Training for combat skills (e.g. munitions build-up teams, weapons load crews, etc.) which are not reinforced in the normal generation of peacetime sorties is particularly critical and requires special management attention. The maintenance training program has equal priority with the unit's operational training requirements. Establish maintenance training according to AFI 36-2232, *Maintenance Training*.

1.11.1. Aircraft Maintenance Qualification Program (AMQP). Qualification training is ongoing, providing adequate skills to accomplish all maintenance tasks required. Each MAJCOM specifies the necessary weapon system task qualifications for each skill level and defines the mechanisms to achieve that qualification.

1.11.2. Cross Utilization Training (CUT). CUT training provides the unit internal flexibility by training individuals to perform tasks that are not in their primary AFSC. This training can offset periods of austere or low skill level manning. It also enhances combat capability by developing a pool of qualified personnel to draw upon during surges. Use care not to create a dependency upon CUT trained personnel for every task. CUT skills should never be a long term fix for an AFSC shortfall. Each technician must maintain proficiency in their AFSC for optimum maintenance capability. Important considerations for units include:

1.11.2.1. Identifying the type of tasks for CUT training and determining which individuals receive that training.

1.11.2.2. Providing CUT training so that personnel can work with little or no assistance.

1.11.2.3. Ensuring CUT does not interfere with skill level upgrade training or weapons system qualification training.

1.11.3. Special experience identifier (SEI) policy (not applicable to ANG/AFRC).

1.11.3.1. Special experience identifiers are designed to identify personnel with special experience and rapidly identify maintenance resources to meet management objectives.

1.11.3.2. The purpose of this policy is to improve the identification of experienced personnel, deployment/assignment equity, and maintenance capability.

1.11.3.3. The objectives of this policy are to:

1.11.3.3.1. Measure unit and MAJCOM experience levels, and support appropriate management action to increase experience levels where needed.

1.11.3.3.2. Ensure maintenance personnel who have relevant hands-on experience on aircraft and engines are awarded all appropriate SEIs.

1.11.3.3.3. Ensure all aircraft maintenance personnel are rotated to SEI coded duty positions where relevant hands-on experience can be acquired within 36 months of date arrived station.

1.11.3.4. OPRs: HQ USAF OPR is AF/ILMM. The maintenance staff is functional OPR at the MAJCOM level. Maintenance supervision is the unit focal point for SEI management.

1.11.3.5. Utilization and training workshops (U&TW): aircraft maintenance career field managers and MAJCOM functional managers will review SEIs in AFMAN 36-2108 for accuracy during U&TWs on maintenance AFSCs.

1.11.3.6. Responsibilities:

1.11.3.6.1. MAJCOM:

1.11.3.6.1.1. Monitor the status of experience levels at each base/unit via analysis of the numbers of personnel possessing special experience identifiers (SEIs) versus the total number of personnel assigned within the AFSC/program element code (PEC).

1.11.3.6.1.2. Identify, by name, those individuals assigned to a base/unit with more than 36 months TOS and not awarded an SEI applicable to that base/unit. Provide this list to the applicable group commander(s)/maintenance supervisor(s)/superintendent(s) for analysis/investigation.

1.11.3.6.1.3. Ensure positions are coded (at MAJCOM or base level), IAW paragraph **1.11.3.8**. Monitor the coding of positions. A recommended measurement is the total number of UMD positions vs. the number of SEI coded positions in a given AFSC.

1.11.3.6.2. Group commander:

1.11.3.6.2.1. Monitor the group experience levels as indicated by the number of assigned personnel with SEIs awarded versus the total number of personnel assigned within the AFSC/PEC.

1.11.3.6.2.2. Investigate and implement corrective actions when individuals with more than 24 months TOS have not been awarded a SEI applicable to the wing of assignment.

1.11.3.6.2.3. Provide to the MAJCOM OPR, the reason(s) why any assigned personnel with more than 36 months TOS has not been awarded an SEI resulting from assignment to a wing position coded IAW AFI 21-101 policy. Provide the proposed date each of these individuals is anticipated to be awarded the applicable SEI.

1.11.3.6.3. Unit commander/maintenance supervision:

1.11.3.6.3.1. Assign personnel to authorized positions consistent with requirements, individuals grade, and skill level.

1.11.3.6.3.2. Ensure previously awarded SEIs are re-designated to newly awarded AFSCs during personnel upgrade actions.

1.11.3.6.3.3. Ensure individuals are awarded the assigned weapons systems SEI to an awarded AFSC when SEI awarding criteria contained in AFMAN 36-2108 has been met.

1.11.3.6.3.4. For multiple mission design series (MDS) units, initiate action to award additional relevant SEIs if/when an individual gains experience on additional MDS'. Award additional SEIs using AF Form 2096, *Classification/On the Job Training Action*, or P-series orders.

1.11.3.6.3.5. Ensure that those personnel with 18-24 months TOS, without an SEI applicable to the unit of assignment, and assigned to positions not coded with an airframe, engine, or sub-system SEI are rotated into positions where an applicable SEI will be earned and awarded.

1.11.3.7. Reporting procedures: MAJCOMs will provide a semi-annual report to HQ USAF/ILMM on/about 1 April and 1 Oct summarizing the MAJCOM experience levels in each of the target AFSCs IAW specified reporting criteria. Reports (RCS: HAF-ILM (SA) 0010) will portray:

1.11.3.7.1. The total number of personnel by CAFSC who have been assigned to a SEI coded or uncoded position with TOS of 18-24, 25-36, and more than 36 months who do not have a unit relevant SEI awarded to any AFSC. Information will be reported IAW the format contained at the HQ USAF/ILMM Aircraft Maintenance website URL:

<http://www.il.hq.af.mil/ilm/ilmm/acmaint/index.html>. In addition, provide specific reasons/logic for each individual without a SEI awarded and greater than 36 months TOS.

1.11.3.7.2. The total number of personnel assigned (SEI target AFSCs) vs. the number of personnel assigned (CAFSC) who possess a wing relevant SEI on any awarded AFSC. Information will be reported IAW the format contained at the HQ USAF/ILMM Aircraft Maintenance website URL: <http://www.il.hq.af.mil/ilm/ilmm/acmaint/index.html>.

1.11.3.8. Code unit manning document (UMD) positions in the following manner:

1.11.3.8.1. All positions where relevant, direct hands-on maintenance experience can be gained will be coded.

1.11.3.8.2. Do not code MCC, Toolroom, Safety, Vehicle NCOs, Quality Assurance, Instructor, Quality, or other staff/support functions with weapon system or engine SEIs.

1.11.3.8.3. MAJCOMs will ensure that only those positions where relevant hands-on aircraft/engine experience can be gained are coded with the weapons system/engine specific SEI based upon the following guidelines.

1.11.3.8.3.1. Code positions with the weapons system SEI: 2A0X1A/B, 2A1X4, 2A3X1X, 2A3X2, 2A3X3X, 2A4X1/X2, 2A5X1X/X2/X3X, and 2A6X3/X4/X6, 2W1X1 (including armament backshops).

1.11.3.8.3.2. Code positions with weapons systems/avionics systems as determined by the lead command for MAF/CAF, HQ AFSOC or HQ AIA: 2A1X1, 2A1X7.

1.11.3.8.3.3. Code positions with engine SEI where personnel can receive hands-on engine experience (flightline, JEIM, and test cell): 2A6X1A/B.

1.11.3.8.3.4. Code positions with either weapons system or low observable SEI: 2A7X3.

1.11.3.8.3.5. Electro-environmental (2A6X6) and Hydraulics (2A6X5) backshop positions will not be coded with SEIs unless the personnel are normally dispatched from the shop to work aircraft.

1.11.3.8.3.6. A/R shops will be coded with the A/R SEI.

1.11.3.8.3.7. For units having positions on their UMD funded by another MAJCOM under a host/tenant or memorandum of agreement, the positions will be coded with the coordination/ approval of the funding MAJCOM.

1.11.3.8.4. MAJCOMs may code additional positions with appropriate SEIs with the concurrence of the MAJCOM functional manager.

1.11.3.9. Triggers: the trigger point is the point where MAJCOMs must review unit experience/manning levels for further action. MAJCOMs may develop their own trigger point, with justification, based on total number of personnel assigned in the AFSC vs. the number of personnel holding a wing applicable awarded SEI. As a minimum, the experience baseline will be 60%. If experience levels in a specific AFSC fall below this point, MAJCOMs should consider steps to

help alleviate the situation. These may include TDY manning assistance, assignment availability codes, using SEIs in the overseas selection/returnee allocations cycle, when available, to direct people with the required SEI into a particular location or command leveling using skill level, SEI, and time on station as the assignment selection criteria. Any request for assistance to AFPC will be accompanied by justification to include total personnel assigned in the AFSC, number of personnel in the wing holding an awarded, relevant SEI and the number of personnel with greater than 36 months time on station without an award of an SEI. Units with personnel on station longer than 36 months with no SEI awarded will have difficulty justifying their need for assistance. Note: this trigger point does not affect or prevent SEI selection rates approved by MAJCOMs/AFPC through normal channels.

Chapter 2

SCHEDULING AIRCRAFT MAINTENANCE

2.1. Wing Plans, Scheduling, and Documentation (PS&D) Section. Wing PS&D develops the wing maintenance plan using aircraft historical data from the automated maintenance system input by all maintenance personnel. The accuracy of entries in the automated maintenance system affects the development of that plan and is a basic responsibility of all unit personnel. Specifically, the wing PS&D section:

- 2.1.1. Coordinates and publishes maintenance plans.
- 2.1.2. Provides planning factors for aircraft availability and maintenance capability to operations and maintenance managers and informs them of deviations from maintenance schedules.
- 2.1.3. Performs the aerospace vehicle distribution officer (AVDO) function according to AFI 21-103, *Equipment Inventory, Multiple Status, Utilization, Reporting System*.
- 2.1.4. Accounts for flying hours according to AFI 21-103.
- 2.1.5. Keeps depot maintenance schedules.
- 2.1.6. Conducts the daily scheduling meeting.
- 2.1.7. Manages the wing's special inspection, time change item, and time compliance technical order (TCTO) programs.
- 2.1.8. Develops procedures for aircraft document reviews.
- 2.1.9. Serves as the functional advisor to other scheduling activities.
- 2.1.10. Coordinates use of aircraft and equipment to meet training requirements.
- 2.1.11. Ensures accomplishment of pre-dock and post-dock inspection meetings. *EXCEPTION:* This duty may be done by logistics group schedulers if the inspection section is in the logistics group.
- 2.1.12. Accounts for -21 equipment outlined in AFI 21-103. This may be decentralized.
- 2.1.13. Controls and updates the maintenance deferred code listing.
- 2.1.14. Checks semiannually the non-installed engine historical documents.
- 2.1.15. Maintains (load, change, and delete) the job standard master listing (JML) for inspections and time changes listed in the applicable aircraft -6 and commodity TOs (i.e. 11 and 14 series TOs). **NOTE:** The LSS engine management (EM) section maintains the JML for engine inspections and time changes. Maintain JMLs for off-equipment items in the owning workcenter.
- 2.1.16. Ensures work packages are loaded in the automated system for periodic and phase, engine changes and other event type inspection requirements (e.g. hard-landing inspection requirements).

2.2. Aircraft Generation Planning. Wing PS&D develops, coordinates, and prepares aircraft maintenance generation flow plans, AF Form 2408, **Generation Maintenance Plan**, and AF Form 2409, **Generation Sequence Action Schedule** (GSAS), for the various unit taskings. The AF Form 2408 reflects the hour sequence of all actions necessary to launch aircraft. The legend block of this form contains a locally established legend which indicates the type aircraft and its tasked mission. The AF Form 2409 shows the actions necessary to generate a specific line number. The report codes used on this form are locally estab-

lished codes for maintenance shown in the action column blocks. Use these report codes to report maintenance actions during generation.

2.2.1. Prepare the GSAS in sufficient detail to satisfy all generation actions. A completed GSAS requires only the aircraft serial number assignment and the 24 hour clock time annotation. Each plan must not exceed the unit's resources, i.e. load crews, equipment, convoys per hour, supervision, etc.

2.2.2. Forward the completed GSAS form to affected activities at the beginning of the generation sequence.

2.3. Operational Planning Cycle. The objective of the operational planning cycle is to execute the wing flying hour program consistent with operational requirements and maintenance capabilities. This process requires operations and maintenance cooperation. The operational planning cycle begins with the annual allocation of flying hours and utilization (UTE) rates. Maintenance schedulers must understand operational needs to determine supportability. These schedulers develop a proposed annual flying plan which considers operational requirements and maintenance capability. Commit the fewest number of aircraft possible to meet programmed UTE rate standards and goals.

2.4. Maintenance Planning Cycle. The maintenance planning cycle ensures proper and effective use of maintenance resources. Schedulers use long-range planning to assess maintenance's ability to support quarterly flying-hour programs, programmed depot maintenance (PDM) schedules, TCTO programs, scheduled inspections and exercises. Automated products are used to assist in planning. Forecast and monitor requirements for the current and next two months. Include predictable maintenance factors based on historical data along with other inputs, such as flow times for maintenance, turnaround times and parts replacement schedules. Additionally, include all known operational events (e.g. exercises, deployments, surges) to determine maintenance's capability to meet operational needs. The squadron operations officers, SMO, and MS review the monthly maintenance plan and weekly schedule prior to submission to wing PS&D.

2.4.1. Flying Hour Allocation. Using the annual flying hour allocation, wing PS&D provides affected workcenters the following planning factors not later than 20 August each year:

2.4.1.1. Required flying hours and estimated sorties and missions, in monthly increments.

2.4.1.2. Flying days in each month.

2.4.1.3. Aircraft and aircrew alert requirements.

2.4.1.4. Known and projected TDY and special mission requirements.

2.4.1.5. PDM schedule.

2.4.1.6. Configuration and munitions requirements.

2.4.2. No later than 1 September, the SMO or MS, provides wing PS&D the following planning factors:

2.4.2.1. Estimated number of aircraft available by month.

2.4.2.2. A projected airframe capability statement.

2.4.2.3. Forecasted personnel capability.

2.4.2.4. The number of supportable sorties for each month in the quarter.

2.4.2.5. An estimated monthly attrition factor. This factor combines the operations, weather, and material (maintenance and supply) factors. Base the attrition factor on operations' request. Do not assign attrition sorties to a specific aircrew for the quarterly planning process. Only plan for 51-series flying requirements.

2.4.2.6. A recommended block scheduling pattern.

2.4.2.7. A statement of limitations.

2.5. Quarterly Scheduling.

2.5.1. Quarterly scheduling starts with the operational requirement for flying time, UTE rate, airframe availability, alert, and other related scheduling data. The squadron operations officer provides these requirements to the SMO or MS not later than 25 days before the beginning of the quarter. The SMO or MS and squadron operations officer discuss these requirements at the scheduling meeting preceding the quarter being scheduled.

2.5.2. Planners ensure the quarterly plans are as detailed and accurate as possible. Include known special missions, PDM schedules, higher headquarters commitments and lateral command support requirements. Refine and adjust monthly and weekly schedules, within unit capabilities, to meet the quarterly plan objectives. Use the following priority to determine which objectives to support if a lack of resources prevents meeting requirements:

2.5.2.1. Alert commitments.

2.5.2.2. Higher headquarters directed missions.

2.5.2.3. Training.

2.5.3. The operations group commander chairs a quarterly meeting no later than 21 days before the next quarter. Current operations briefs the unit's quarterly plan and include operational requirements, support capability, and any difficulties expected.

2.6. Monthly Scheduling. The monthly schedule refines the quarterly plan:

2.6.1. At the first weekly scheduling meeting of the month, the squadron operations officer provides the SMO or MS with the estimated operational needs for the following month in as much detail as possible. Include known takeoff and landing times.

2.6.2. At the second weekly scheduling meeting of the month, the SMO or MS tells the squadron operations officer whether requirements can be met or limitations exist. Make adjustments to the proposed schedule to satisfy maintenance and operational requirements.

2.6.3. At the third weekly scheduling meeting, with the wing commander, formalize the next month's plan. During this meeting, operations outlines past accomplishments, status of flying goals, problems encountered, projected maintenance capability, aircraft and equipment availability, and detailed needs for the next month. If conflicts arise between operational requirements and maintenance capability present alternatives and limitations. The wing commander decides what portion of the mission to support and to what degree.

2.6.4. When the wing commander approves the proposed monthly flying schedule contract, include it as a portion of the monthly flying and maintenance plan. The flying schedule specifies aircraft flying

hours, total sorties and missions, alert requirements, and sortie or mission requirements for each mission design series (MDS) by squadron, group, or wing.

2.7. Monthly Flying and Maintenance Plan. The monthly flying and maintenance plan combines all aspects of aircraft utilization. Besides the flying schedule, include:

2.7.1. Monthly maintenance requirements (as required):

2.7.1.1. Transient work schedule, if applicable.

2.7.1.2. Scheduled inspections, TCTOs, engine changes, time changes, delayed discrepancies awaiting parts, contract or depot maintenance, washes, corrosion control, and training aircraft.

2.7.1.3. SE scheduled inspections, contract or depot maintenance, TCTOs, time changes, washes, and corrosion control. Do not include SE scheduled inspections at units using the scheduling procedures in the automated management system.

2.7.1.4. Avionics and other off-equipment maintenance scheduled inspections, TCTOs, assembly or repair operations.

2.7.1.5. Engine in-shop inspections.

2.7.1.6. Munitions, photo, ECM and other mission loading or configuration requirements, including ammunition changes.

2.7.1.7. Total ordnance requirements for aircraft support.

2.7.1.8. Tanks, racks, adapters, and pylons (TRAP) and war reserve material (WRM) scheduled inspections, TCTOs, assembly, or repair operations.

2.7.1.9. Special activities, such as commander's calls, group temporary duty (TDY), and unit formations.

2.7.1.10. Monthly training schedules, if not published separately.

2.7.2. Detailed support requirements, including as necessary:

2.7.2.1. Petroleum, oil, and lubricants (POL) servicing.

2.7.2.2. Supply requirements.

2.7.2.3. Food service requirements.

2.7.2.4. Fire department requirements.

2.7.2.5. Security requirements.

2.7.2.6. Civil engineer requirements.

2.7.2.7. Airfield operations.

2.8. Weekly Scheduling. Weekly scheduling is the final refinement to the monthly plan and results in the weekly flying and maintenance schedule. The squadron operations officer, SMO, and MS review the proposed weekly flying and maintenance schedule prior to the weekly scheduling meeting. At the scheduling meeting, evaluate the past week's accomplishments and negotiate and approve refinements to the coming week's schedule.

2.8.1. Not later than 2 workdays before this meeting the squadron operations officer gives the SMO or MS the following information (as required):

- 2.8.1.1. Aircraft takeoff and landing times.
- 2.8.1.2. Configuration requirements.
- 2.8.1.3. Munitions requirements.
- 2.8.1.4. Fuel loads.
- 2.8.1.5. Special or peculiar mission support requirements.
- 2.8.1.6. Alert requirements.
- 2.8.1.7. Exercise vulnerability.
- 2.8.1.8. Deployments.
- 2.8.1.9. Off-base sorties.
- 2.8.1.10. Other special requirements.

2.8.2. Once approved, the schedule is the final planning guide for both operations and maintenance. Follow it as printed or as amended by coordinated changes. Wing PS&D distributes the schedule to each appropriate activity and workcenter no later than Friday morning preceding the effective week.

2.8.3. Units print a weekly schedule for normal home base operations, and during deployments. Include the following in the weekly flying and maintenance schedule:

- 2.8.3.1. Sortie sequence numbers, aircraft tail numbers (primary and spares) when known, scheduled takeoff and landing times, aircraft or equipment scheduled use times, configurations, and special equipment requirements.
- 2.8.3.2. Spare aircraft requirements. Spare requirements are printed by day for each flying squadron. Generate only the absolute minimum of spare aircraft.
- 2.8.3.3. Scheduled maintenance actions, by aircraft and equipment serial number, to include inspections, TCTOs, time changes, contract and depot inputs, engine changes, washes or corrosion control, documents review and deferred discrepancies.
- 2.8.3.4. Required pre-inspection and other maintenance meeting schedules to include minimum attendees.
- 2.8.3.5. Wash rack use.
- 2.8.3.6. On Equipment training requirements.
- 2.8.3.7. SE inspection or maintenance schedule by type, serial number, or identification.
- 2.8.3.8. A list of new or revised publications, TO indexes, inspection workcards, checklists and code books; include date of change. Automated products, such as Automated Technical Order Management Systems (ATOMS), may be used.

2.8.4. Changes to the weekly schedule:

- 2.8.4.1. Update the schedule with pen-and-ink changes. Use an AF Form 2407, **Weekly/Daily Flying Schedule Coordination Sheet**, stating the changes are pen-and-ink (may be automated).

2.8.4.1.1. Changes made during the daily scheduling meeting require an AF Form 2407.

2.8.4.1.2. Changes made after the daily scheduling meeting and prior to the unit's first crew ready time the next day also require an AF Form 2407.

EXCEPTION: Changes arising during the remainder of the flying day (those after the first crew ready time) do not require an AF Form 2407.

2.8.4.2. The agency requesting the change initiates the AF Form 2407 and coordinates it through the affected production superintendent, SMO or MS, flying squadron operations officer, operations group, logistics group, and wing staff agencies.

2.9. Depot Programs. Wing PS&D keeps a current serial number listing of projected inputs and outputs of aircraft and equipment into depot repair programs. Schedulers use the AFTO Form 103, **Aircraft/Missile Condition Data**, to record certified maintenance needs and send it through wing PS&D according to TO 00-25-4, *Depot Maintenance*. Wing PS&D then coordinates any resulting changes to the depot program with affected scheduling functions.

2.10. Document Management. Documentation sections keep historical documents and maintenance data essential to the planning and scheduling of maintenance. The documentation activity is an essential link in the processing of related forms for TCTOs and time change items.

2.10.1. Keep individual documents for end items, subsystems, and components in accordance with the TO 00-20 series, this regulation, automated management systems' documentation, AFI 21-103, AFI 37-122, *Air Force Records Management Program*, and the applicable -6 TOs.

2.10.2. Use automated products in place of AFTO Forms 95, **Significant Historical Data**, to document significant historical events on aircraft and engines.

2.10.3. Filing and Disposition. Establish files and properly dispose of documents. A file (or files) for maintenance documents is set up in accordance with AFI 37-122 and TO 00-20-1. Complete disposition of documents according to AFI 37-138, *Disposition of Air Force Documentation-Policies, Procedures, and Responsibilities*. Equipment records may be decentralized down to the section owning the equipment.

2.10.4. Documents Review and Validation. Units initiate documents review and validations on assigned aircraft at designated intervals. As a minimum review the documents before and upon completion of phase, periodic or isochronal inspections, or other major maintenance such as programmed depot maintenance, analytical condition inspections, and fatigue tests. Also, review AFTO Forms 781F, **Aerospace Vehicle Flight Report & Maintenance Document**, for accuracy.

2.11. TCTO Management. Wing PS&D administers and manages the TCTO program. TCTOs and headquarters directed modifications and inspections provide units with instructions for doing a one time-change, modification, inspection of equipment, or installation of new equipment. Use automated system products to monitor the progress of TCTOs. Depending on the cost, man hours, skill-level, or equipment required, TCTOs are categorized and designated for compliance at base level or at a depot. Since TCTOs are scheduled maintenance, they are integrated into the maintenance planning cycle. Accomplish TCTOs concurrent with other scheduled maintenance to the maximum extent possible. Manage TCTOs according to automated management systems' documentation, TO 00-5-15, *Time Compliance Technical Orders*, and TO 00-20-4, *Configuration Management System*.

2.11.1. Management of TCTOs. The group quality assurance section sends sufficient "working" copies of all newly received TCTOs to wing PS&D. Wing PS&D, works with the group quality assurance section to determine if TCTOs apply to the units' assigned aircraft or equipment. The engine manager does the same for engine-related TCTOs. Input each TCTO into the automated system according to systems documentation, or into the manual system according to TO 00-20-4.

2.11.1.1. Prepare and process kits, parts or special tools requirements according to automated management systems' documentation. Wing PS&D prepares an on-line work order in the automated system for each affected end-item, including spares.

2.11.1.2. If a condition or inspection TCTO generates a requirement for parts, the performing workcenter enters the discrepancy in the AFTO Forms 781A, **Maintenance Discrepancy and Work Document**, or applicable equipment record, and orders the required parts as normal wear out and replacement. Condition and inspection TCTOs are complete when the inspection is finished.

2.11.1.3. Wing PS&D sends copies to each affected workcenter and tracks accomplishment of command directed and local one-time inspections and modifications. Scheduling functions generate a TCTO status report showing compliance of TCTOs. Wing PS&D periodically reviews the TCTO status reports to ensure accurate data entry and provides assistance to other scheduling functions if necessary. Wing PS&D reports status of TCTOs for assigned equipment according to automated management system documentation, TO 00-20-4, and TO 00-5-15, as applicable.

2.11.2. TCTO Planning Meetings. Wing PS&D schedules and chairs TCTO planning meetings.

2.11.2.1. During this meeting, determine responsibility for performance of work and documentation for both performing and assisting workcenters. Wing PS&D establishes attendance requirements and initiate AF Form 2410, **Inspection/TCTO Planning Checksheet**, or meeting minutes. Use these to record the meeting and methods of accomplishment. Annotate pertinent discussion items (e.g. TCTO applicability and purpose, number of units to be modified, serial or ID number of equipment, verification, disposition of affected components), on the AF Form 2410 or meeting minutes. All attendees sign this form at the conclusion of the planning meeting indicating agreement with the conditions.

2.11.2.2. On agreement, Wing PS&D:

2.11.2.2.1. Loads the TCTO into the automated system showing current status.

2.11.2.2.2. Orders any kits, parts or special tools through the automated system's Standard Base Supply System module, where capability exists.

2.11.2.2.3. Establishes a folder for each TCTO after initial entry in the automated system. Include the AF Form 2410 or meeting minutes, automated system products (if required), a supply cover letter of affected items in stock (from quality assurance), and the basic TCTO. Also, include pertinent documents affecting the TCTO (supplements, messages, notices of kit availability, supply difficulty letters, etc.). Maintain this folder until the rescission date. Other scheduling functions maintain similar TCTO folders with pertinent documentation. Destroy folders according to AFI 37-122 and TO 00-20-4.

2.11.3. Control and Transfer of TCTO Kits. Transfer aircraft or equipment with TCTOs still pending completion with their applicable TCTO kits. Retain engine TCTO kits for engines installed on aircraft

at depot locations if the aircraft is returning to that unit for TCTO compliance. AFMAN 23-110, TO 00-5-15, and TO 00-5-1 contain detailed guidance for the transfer of TCTO kits.

2.12. Time Change Items. Wing PS&D identifies and tracks projected time changes on AFTO Form 223, **Time Change Requirement Forecast**. Use forecasts to order time change components before their due date. Schedulers forecast only those selected items specifically identified in any of the following: TO 00-20-9, *Forecasting Replacement Requirements for Selected Calendar and Hourly Time Change Items*; 00-20-9-1, *Forecasting Replacement Requirements for Cartridge/Propellant Actuated Devices (CAD/PAD)*; FSG 13, and *Material Management Code AQ Items*; applicable commodity TOs; or the aircraft -6 TO. Schedulers:

2.12.1. Order all items requiring time change up to 60 days before the required month. Order munitions items 60 days before the beginning of the month required. Forward only AF Forms 2005, **Issue/Turn-In Request**, to the munitions supply point. Include the forecast time change date. Use SBSS procedures if available.

2.12.2. Schedule the time change in the automated system and incorporate it in the weekly schedule upon notification by supply that the part is available.

2.12.3. Update the suspense validation in the automated system when the time change is completed.

2.12.4. Obtain a job standard (JST) number for both the date of manufacture (DOM) and of installation (DOI) for cartridge actuated devices (CAD), propellant actuated devices (PAD), and life sustaining items in the aircraft -6 TO and applicable commodity TOs from wing PS&D.

2.12.5. Coordinate management of their time change items with egress, survival equipment and life support.

2.12.6. Load only the JST number (DOI or DOM) that comes due first against a specific part or serial number. When the DOI and DOM frequencies are identical, maintain a job standard for the DOM as a minimum.

2.12.7. Establish responsibilities for preparing the time change requirements forecast. Consolidate all time change forecasts prior to submission to supply.

2.13. Aircraft Configuration Management (ACM). ACM provides unit managers the capability to determine the configuration of their aircraft. The configuration management subsystem identifies selected serially controlled and time change items (TCI) into the automated maintenance management system. Load only approved part numbers, with an exact quantity per assembly (QPA) and next higher assembly (NHA) identified by work unit code. To manage the aircraft configuration management subsystem, wing PS&D:

2.13.1. Assigns specific workcenters, which perform remove and replace actions for configured items, with responsibility to update the automated system database. This includes checking the suspense validation records for daily processing of suspense's.

2.13.2. Checks, during document reviews, the actual configuration data against the approved configuration. Annotate disparities on the applicable AFTO Form 781, **Aircrew/Mission Flight Data Document**. Enter out-of-configuration life sustaining TCIs (e.g. egress and life support) in the AFTO Form 781A as a red X condition.

2.13.3. Discusses the actual or approved configuration during all aircraft pre-dock meetings. Verify items identified as out of configuration during the inspection. Identify items discovered as out of configuration during the inspection at the post dock meeting. Ensure the responsible workcenter updates the automated system.

2.13.4. Configuration Tables. The maintenance analysis and database management section initializes and modifies the configuration tables upon approval from the aircraft system program director (SPD). Maintenance personnel discovering a tracked item, installed with an Air Force part number, and not on the approved configuration table, notify the database management section. Database management section identifies the disparity to the SPD's configuration manager. On validation, the SPD authorizes the database management section to add the new part number to the approved table. Modify the configuration table without approval if the change is the result of a TCTO.

2.14. Modification Management. The purpose of this section is to define Air Force policies and procedures for accomplishing modifications to in-service systems to correct deficiencies, improve reliability, maintainability, and/or capability.

2.14.1. Definitions. There are three classes of modifications which can be made to Air Force systems.

2.14.1.1. Temporary - 1 (T-1). T-1 modifications temporarily change, add, or remove equipment to provide increased capability for a special mission. T-1 modifications are normally made by the using command for operational reasons, and are not used as substitutes for permanent modifications. T-1 modifications will not be maintained on the system for more than one year without a waiver from the single manager (SM). T-1 modifications will not be installed on more than five systems without HQ USAF/LGM approval. Systems will be returned to their original configuration upon removal of the modification.

2.14.1.2. Temporary - 2 (T-2). T-2 modifications are temporary modification required to support research, development, test, and evaluation (RDT&E), in service testing of potential replacement items (form, fit, and function), and for aircraft/stores compatibility testing. T-2 modifications will normally be accomplished only on programs having approved program management directives (PMDs). No more than five systems may be modified on a temporary basis without SM approval. T-2 modifications will not be maintained on the system for longer than the approved test program requires. Systems will be returned to their original configuration upon completion of the test. They are usually done to:

2.14.1.2.1. A selected set of operational or test systems to evaluate a proposed permanent modification.

2.14.1.2.2. Test or test support equipment to support the testing of an approved acquisition program (e.g., modification of chase aircraft, modification to aerial targets where targets support various tests and are attrited in the test, installation of instrumentation into the system, etc.)

2.14.1.2.3. Test in an operational environment to evaluate operational suitability including reliability and maintainability of a form, fit, and function potential replacement item.

2.14.1.2.4. Evaluate the aircraft/stores capability of an existing or new store on an existing aircraft.

2.14.1.2.4.1. Permanent (P). These modifications make permanent changes to correct safety or materiel deficiencies, improve reliability and maintainability, or to add or remove capability.

2.14.1.2.4.2. Permanent - Safety (P(S)). Safety modifications are permanent modifications which correct materiel or other deficiencies (per TO 00-35D-54) which could endanger the safety of personnel or cause loss or extensive damage to systems or equipment.

2.14.2. All permanent modifications will be managed as acquisition programs.

2.14.3. The SM of the system being modified is responsible for the engineering integrity of that system. Therefore, all proposed temporary and permanent modifications must be reviewed by the SM's configuration control board (CCB) and be approved by the SM prior to being implemented.

2.14.4. All permanent modifications to systems will include the appropriate modifications to the associated support equipment, computer resources, and system training devices and to the spares supporting those systems or equipment items.

2.14.4.1. When more than one SM (including commodity SMs) are involved, the PMD will identify the responsibilities for development and installation. Normally, the SM of the actual mission design series (MDS) being modified will be designated as the integration lead.

2.14.4.2. The involved SMs, the using command(s), Air Education and Training Command (AETC), and the supporting depot(s) will develop an agreed-to implementation approach and schedule. This approach and schedule establishes all the need dates and actions.

2.14.5. Modifications to Federal Aviation Administration (FAA) Certified Aircraft. Modifications to Air Force aircraft which have FAA certification shall not cause the aircraft to lose its FAA certification. All modifications to such aircraft shall comply with AFPD 62-4, *Civil Airworthiness Standards for Aircraft*.

2.14.6. Modifications to Munitions. All proposed modifications to aircraft-carried munitions shall include SEEK EAGLE certification (per AFI 63-104, *The SEEK EAGLE Program*). All modifications to Air Force nuclear munitions or their associated support/training equipment shall be nuclear certified (per AFI 91-103, *Air Force Nuclear Safety Certification Program*). All modification to Air Force non-nuclear munitions or their associated support/training equipment shall be certified (per AFI 91-205, *Non-Nuclear Munitions Safety Board*).

2.14.7. Using Command Initiated Temporary Modifications. Using commands will initiate T-1 and T-2 modifications using an AF Form 1067. The proposed modification must be approved by the using command CCB chairman and then forwarded to the SM for engineering approval. The using command may install the modification only after SM engineering approval is received. The using command will establish internal procedures for documenting and managing the modification. For configuration control and management, a complete copy of the modification documentation will be permanently maintained in the historical records of the system(s) modified. The using command is responsible for all budgeting and funding of using command initiated T-1/T-2 modifications.

2.14.8. SM Initiated Temporary Modifications (T-2 Modifications only). When the SM has engineering responsibility for the item being modified, the SM shall establish internal procedures for documenting and managing the modification. For configuration control and management, a complete copy of the modification documentation will be permanently maintained in the historical records of the system(s). When a SM needs to modify a system managed by another SM, the requesting SM will send

an AF Form 1067 to the SM with engineering authority for approval. The requesting SM is responsible for funding all T-2 modifications he/she initiates.

2.14.9. Initiation of Permanent Modifications. The appropriate procedures for initiating a permanent modification depends on the estimated cost of the effort (ref AFI 10-601). Time Compliance Technical Orders (TCTOs) shall be used to document all permanent modifications (ref TO 00-5-15). Generally, TCTOs are required only after the Air Force assumes configuration control of a system or commodity. Engineering Change Proposals (ECPs) control modifications prior to this point. Prior to implementation, all modifications must be approved by the SM CCB. CCB actions on modification proposals will be documented on AF Form 3525. This form is produced electronically by the Modifications Management System, D087L. The D087L system is available for use by all modification managers in AFMC, and the data is available Air Force wide. Configuration information will be processed and reported in the Generic Configuration Status Accounting Subsystem (GCSAS). The GCSAS is a single unified information source for all Air Force military system configuration status accounting. GCSAS is a subsystem of the Reliability and Maintainability Information System (REMIS) and will provide cradle-to-grave tracking of serially controlled configuration items.

2.14.10. Safety Modifications. Safety modifications shall take priority over all other modifications for funding and implementation. For each safety modification, the SM will conduct a risk assessment. All safety modifications will be accomplished in the minimum amount of time required to ensure a safe and operationally effective fix. The goal for accomplishing engineering, test, production, and complete installation of the modification on the fleet of systems/equipment is 18 months. A modification must meet the following criteria to qualify as a safety modification: the deficiency which the modification is to correct must have caused or could cause loss of, or serious injury to, personnel or loss of, or extensive damage to, systems/equipment. To be designated as a safety modification, a request for safety modification designation must be forwarded from the SM for approval by the Commander of the lead command and the Director of Air Force Safety. If the deficiency does not cause the fleet to be grounded, the approving Commander must provide rationale for the safety designation.

Chapter 3

AIRCRAFT GENERATION, REPAIR AND INSPECTION

3.1. Responsibilities. The squadron maintenance officer (SMO) or maintenance supervisor (MS) or superintendent, as applicable, advises the squadron commander on technical matters. They control maintenance through production superintendents, flight chiefs, and section or shop chiefs. Supervisor responsibilities differ only in degree and are common and applicable to all maintenance functions.

3.1.1. SMO or MS. Guide and direct subordinate supervisors specifically with regard to:

3.1.1.1. Administration:

3.1.1.1.1. Establishes and manages a technical administration function which controls an internal distribution system.

3.1.1.1.2. Supports the TO improvement program, and processes changes according to TO 00-5-1.

3.1.1.2. Production:

3.1.1.2.1. Designates flight chiefs in coordination with the squadron commander.

3.1.1.2.2. Adjusts shift resources to fulfill production requirements.

3.1.1.2.3. Assigns adequate supervisory coverage for each shift.

3.1.1.2.4. Coordinates on approval of production inspectors and includes those personnel on the special certification roster.

3.1.1.2.5. Ensures proper documentation of maintenance actions.

3.1.1.3. Personnel and Manning:

3.1.1.3.1. Ensures the unit manpower document (UMD) mirrors the approved organizational structure.

3.1.1.3.2. Maintains an updated current copy of the unit personnel manpower roster (UPMR). Maintains a record of personnel actions and verifies entry of approved actions into the personnel data subsystem.

3.1.1.3.3. Ensures special experience identifier (SEI) qualified individuals are matched against proper SEI positions on the UMPR.

3.1.1.3.4. Ensures SEIs are awarded to individuals meeting the qualification criteria and that they are reflected in the personnel data subsystem.

3.1.1.3.5. Allocates projected gains against pending or actual vacant slots.

3.1.1.3.6. Distributes gain and loss lists to flight chiefs.

3.1.1.4. Planning. Participates in the maintenance planning cycle.

3.1.1.5. Safety:

3.1.1.5.1. Ensures only qualified personnel accomplish maintenance with the appropriate equipment.

- 3.1.1.5.2. Ensures compliance with Air Force 91- and 127-series safety directives, appropriate Air Force occupational safety and health standards (AFOSH STD), and applicable industrial safety publications.
- 3.1.1.5.3. Establishes procedures to minimize foreign object damage and dropped objects.
- 3.1.1.5.4. Develops IPIs according to TO 00-20-1.
- 3.1.1.5.5. Develops and monitors environmental protection guidance.
- 3.1.1.6. Equipment:
 - 3.1.1.6.1. Ensures security, storage maintenance, and proper use of equipment according to AFMAN 23-110, volume II, part 13.
 - 3.1.1.6.2. Complies with TO 00-20-7, *Inspection System, Documentation, & Status Report for Support & Training Equipment*, for SE included in WRM and mobility kits.
- 3.1.1.7. Supply:
 - 3.1.1.7.1. Establishes procedures to control repair cycle assets according to TO 00-20-3.
 - 3.1.1.7.2. Reviews the D23 and other pertinent supply products to ensure proper asset management.
 - 3.1.1.7.3. Ensures reporting of materiel deficiencies according to TO 00-35D-54, *Deficiency Reporting*.
- 3.1.2. Production Superintendent:
 - 3.1.2.1. Manages the maintenance production effort by assigning priorities to meet the flying and maintenance schedules. Aggressively works not-mission capable (NMC) aircraft.
 - 3.1.2.2. Directs action to resolve personnel shortages and coordinates requirements with the maintenance coordination function when requirements are beyond a unit's capability.
 - 3.1.2.3. Helps establish the monthly and weekly maintenance plans and attends the daily maintenance planning meeting.
 - 3.1.2.4. Directs cannibalization on assigned aircraft and coordinates the action with the maintenance coordination function and supply.
 - 3.1.2.5. Maintains a current on-base disaster map with cordon overlay and appropriate check-sheets outlining duties during disasters or exercises.
 - 3.1.2.6. Understands and executes specific disaster control duties including the provisions of AFI 32-4001, *Disaster Preparedness Planning and Operations*, with regard to the movement of aircraft, SE, and evacuation of flightline personnel.
 - 3.1.2.7. Becomes familiar with emergency war order (EWO) and contingency plans.
 - 3.1.2.8. Understands aircraft status reporting as covered in AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*, and applicable supplements. Works closely with Expeditors and the maintenance coordination function to ensure actual aircraft status matches aircraft status reported in the automated reporting system.
- 3.1.3. Flight or Section Chief:

- 3.1.3.1. Evaluates production and equipment performance to identify deficient areas and initiates corrective actions.
- 3.1.3.2. Manages assigned maintenance personnel and their work schedules.
- 3.1.3.3. Ensures technicians are trained and qualified to perform assigned tasks and motivated to perform quality maintenance.
- 3.1.3.4. Enforces the use of technical data. Ensures TO files are current and maintained according to TO 00-5-2.
- 3.1.3.5. Ensures disposal of recoverable materials, including scrap metal and silver bearing materials according to AFMAN 23-110, volume VI.
- 3.1.3.6. Ensures turn-in of all recoverable, expendable supplies.
- 3.1.3.7. Maintains assigned equipment according to 00-20 series TOs and TO 34-1-3, *Repair and Maintenance of Machinery and Shop Equipment*. Ensures SE is properly maintained, cleaned and calibrated.
- 3.1.3.8. Manages administrative details including enlisted performance reports (EPR), additional duties, appointments etc.
- 3.1.3.9. Maintains housekeeping, safety, security, and environmental control standards.
- 3.1.3.10. Ensures sufficient qualified and certified personnel are available to support unit wartime and contingency missions.
- 3.1.3.11. Reviews new, revised or changed publications and informs unit personnel of any significant changes. Determines if new or changed publications affect the qualifications of unit personnel.
- 3.1.3.12. Ensures emergency action procedures are established.
- 3.1.3.13. Ensures all personnel receive fire extinguisher training and, if applicable, respirator training.
- 3.1.3.14. Ensures compliance with environmental protection guidance.
- 3.1.4. Expediter:
 - 3.1.4.1. Manages available maintenance resources to accomplish scheduled and unscheduled maintenance.
 - 3.1.4.2. Coordinates aircraft mission capable status and aircraft configuration status with the maintenance coordination function and the production superintendent.
 - 3.1.4.3. Updates status of cannibalization actions on assigned aircraft.
 - 3.1.4.4. Ensures aircraft are ready for flight.
 - 3.1.4.5. Orders parts, assigns appropriate priorities and document numbers, and relays this information to the maintenance coordination function.
 - 3.1.4.6. Coordinates with the maintenance coordination function for support beyond unit capability.

3.1.5. Aircraft Crew Chief. Selected on the basis of initiative, management ability, and technical knowledge, regardless of specialty.

3.1.5.1. Performs and coordinates maintenance on the aircraft.

3.1.5.2. Accumulates knowledge of the aircraft's long-term problems, and takes steps to fix those problems.

3.1.5.3. Is qualified on at least all servicing tasks and powered and non-powered AGE operations.

3.2. Flying Crew Chief (FCC) Program.

3.2.1. Maintainers who are required to regularly fly and maintain their aircraft are called "Flying Crew Chiefs" and may qualify for Special Duty Assignment Pay (SDAP). The objective of the FCC program is to:

3.2.1.1. Provide qualified maintenance support for aircraft at locations other than home station.

3.2.1.2. Reimburse maintenance personnel for the added burden of maintaining special qualifications and performing regular aerial flight.

3.2.2. The FCC program only applies to maintenance personnel directed to fly regularly as a result of:

3.2.2.1. Department of Defense, Air Force, MAJCOM, or other higher authority written policies directing FCCs to accompany their aircraft for mission accomplishment.

3.2.2.2. Technical Order (T.O.) directed in-flight maintenance (e.g. helicopter functional check flights).

3.2.3. The following situations would not qualify the FCC for SDAP.

3.2.3.1. Occasional flights where the aircraft is used as transportation in lieu of commercial air.

3.2.3.2. Incentive or indoctrination flights.

3.2.3.3. Deployments where additional maintenance personnel are required at the designated location to supplement assigned maintainers.

3.2.4. Qualifying missions.

3.2.4.1. A mission consists of one or more sorties with a mission number as entered on the AFTO Form 781 or equivalent.

3.2.4.2. For a mission to meet the intent of this program, the mission must meet the criteria in either paragraph [3.2.4.2.1.](#) or [3.2.4.2.2.](#)

3.2.4.2.1. A qualifying mission is one where the FCC is required to accomplish maintenance (servicing, maintenance, or inspection) at locations other than home station so the aircraft is prepared for its next departure. The mission must also be one where FCCs are required to fly by higher authority written policies (e.g. special airlift missions, alert missions, special operations, etc.).

3.2.4.2.2. A qualifying mission is one where FCCs are required by technical order to perform in-flight maintenance (e.g. helicopter functional check flights (FCFs)).

3.2.5. FCC responsibilities.

3.2.5.1. HQ USAF/DPRS oversees the overall SDAP program and provides program guidance in AFI 36-3017, *Special Duty Assignment Pay*. DPRS programs and budgets for SDAP based on inputs from HQ USAF/ILMM.

3.2.5.2. HQ USAF/ILMM is the SDAP functional manager for FCCs. ILMM sets criteria for FCCs, validates MAJCOM FCC reports, and forecasts FCC SDAP budget needs. ILMM approves/disapproves FCC position increases/decreases in coordination with DPRS.

3.2.5.3. MAJCOM headquarters implements the FCC program, appoints a program manager to enforce standards, and prepares the annual report. MAJCOM program managers assign FCC SDAP positions with an AFSC prefix of "C" and an appropriate special experience identifier (SEI) on command manpower documents; and set additional qualification standards for their FCCs as needed.

3.2.5.4. Squadron commanders:

3.2.5.4.1. Control their squadron FCC program as prescribed in AFI 36-3017, AFMAN 36-2108, and this instruction.

3.2.5.4.2. Ensure FCCs fly only when needed for the mission.

3.2.5.4.3. Appoint and remove FCCs. Select individuals in maintenance AFSCs outlined in AFMAN 36-2108.

3.2.5.4.4. Ensure only qualified FCCs who meet minimum requirements receive SDAP. FCCs must fly a minimum of three qualifying missions per quarter.

3.2.5.4.5. Normally, assign no more than two FCCs per aircraft to each qualifying mission unless approved by MAJCOM LG. Exception: squadron commander may assign the minimum number of additional FCCs when required to maintain proper work-rest cycles or meet T.O. requirements.

3.2.5.4.6. Appoint a unit program manager.

3.2.5.5. Unit program managers:

3.2.5.5.1. Perform FCC program administrative duties.

3.2.5.5.2. Track status and prepare unit report.

3.2.5.5.3. Process paperwork identifying FCC personnel to be awarded a "C" prefix as prescribed in AFI 36-3017. Ensure personnel possess the appropriate SEI for their MDS aircraft.

3.2.5.6. En route supervisors:

3.2.5.6.1. Will not assign FCCs to work other en route aircraft.

3.2.5.6.2. Will brief FCCs on local safety precautions, maintenance practices, and limitations.

3.2.5.6.3. Coordinate with the FCC and aircraft commander on a work/rest plan and transportation to quarters.

3.2.5.7. Aircraft commanders (AC):

3.2.5.7.1. Establish with the FCC and enroute/transient supervisor a work/rest plan based on maintenance and mission requirements. The AC will be the primary decision authority to determine when the FCC begins a rest cycle for the next mission.

3.2.5.7.2. Arrange quarters with the crew and inform the FCC of billeting location.

3.2.6. FCC qualifications.

3.2.6.1. Primary FCC:

3.2.6.1.1. Is normally a staff or technical sergeant 5- or 7-level. Qualified technicians of higher rank are eligible. The group commander may appoint SrA technicians in exceptional cases.

3.2.6.1.2. Is more highly qualified than others in their field, exceptionally responsible, and possess the necessary special qualifications. As a minimum, the primary FCC must be qualified and certified on the following MDS applicable items:

3.2.6.1.2.1. The special experience identifier (SEI) for the aircraft assigned to as a FCC.

3.2.6.1.2.2. Refuel/defuel member and supervisor; concurrent servicing supervisor (as applicable).

3.2.6.1.2.3. Tow member, tow supervisor, tow brake operator, and tow vehicle operator.

3.2.6.1.2.4. Liquid/gaseous oxygen servicing, nitrogen and tire servicing.

3.2.6.1.2.5. Tire and brake change; launch; recovery; marshalling; preflight, thru-flight and postflight inspection.

3.2.6.1.2.6. Auxiliary power unit/gas turbine compressor/air turbine motor operation/quick air start system.

3.2.6.1.2.7. Engine run.

3.2.6.1.2.8. Kneeling operation and cargo door/ramp/visor operation on applicable MDS.

3.2.6.1.2.9. Clear Red X discrepancies, perform IPIs, clear repeat/recurring discrepancies, clear could not duplicate discrepancies .

3.2.6.1.2.10. All applicable powered/nonpowered aerospace ground equipment.

3.2.6.1.2.11. Is well-qualified to operate, troubleshoot, service, and perform maintenance on their aircraft's critical systems as required by the MAJCOM.

3.2.6.2. Assistant FCC qualifications:

3.2.6.2.1. May be a 5 level A1C or above with at least a SEI on their assigned aircraft, and must accompany a fully qualified FCC.

3.2.6.2.2. As a minimum, the assistant FCC will be qualified and certified on the following MDS applicable items:

3.2.6.2.2.1. Refuel/defuel member.

3.2.6.2.2.2. Tow member, tow brake operator, and tow vehicle operator.

3.2.6.2.2.3. Liquid/gaseous oxygen servicing, nitrogen and tire servicing.

3.2.6.2.2.4. Tire and brake change; launch; recovery; marshalling; pre-flight, thru-flight and postflight inspection.

3.2.6.2.2.5. Auxiliary power unit/gas turbine compressor/air turbine motor operation/quick air start system.

3.2.6.2.2.6. Cargo door/ramp/visor operation on applicable MDS.

3.2.6.2.2.7. All applicable powered/nonpowered aerospace ground equipment.

3.2.7. Work/rest plan:

3.2.7.1. The FCC duty period starts when the FCC shows at the aircraft prior to departure.

3.2.7.2. Flying time is considered duty time.

3.2.7.3. Rest is defined as the condition which allows an individual the opportunity for a minimum of 8 hours uninterrupted sleep in every 24 hours. Any interruptions must be made under the most exceptional circumstances.

3.2.7.4. Maximum shifts under normal conditions are 12 hours, but may be extended for mission requirements. The AC is the decision authority for extended shifts.

3.2.8. Program reporting. Units report annually the status of SDAP for flying crew chiefs to the MAJCOM by 15 July. MAJCOMs forward their yearly report to USAF/ILMM by 15 August. Use previous FY 4th quarter; and current FY 1st, 2nd, and 3rd quarters. Reports will include the following information by unit designation:

3.2.8.1. Number of C-coded FCC positions on the unit manning document entitled to be filled. (include approved changes: losses/increases).

3.2.8.2. Number of people filling C-coded positions. Normally this number will equal the number from para [3.2.8.1](#).

3.2.8.3. Number of qualifying missions flown per quarter by C-coded crew chiefs. Include the number of T.O. directed flights.

3.2.8.4. For T.O. directed flights only. Number of T.O. directed missions per quarter that required FCCs. Both the FCC missions and FCF missions warrant special duty pay or hazardous duty pay, but not both. Both are therefore counted under the predominate mission requirement.

3.2.8.5. Number of qualifying missions flown per quarter by personnel without the C prefix. Include T.O. directed missions flown by non-C prefix personnel.

3.2.8.6. Waiver renewals: submit a brief justification for waivers requiring renewal.

3.2.8.7. Unit and MAJCOM remarks and overall program assessment (include remarks to justify vacant positions.)

3.2.9. Waivers.

3.2.9.1. Forward unit waiver requests to the MAJCOM FCC program manager who will either disapprove/return to unit, or approve/forward to AF/ILMM.

3.2.9.2. All approved waivers are reviewed annually as part of the annual report unless otherwise stipulated by the approval authority.

3.3. Aircraft Generation.

3.3.1. Production Superintendents manage the overall flightline production effort.

3.3.2. Expeditors supervise aircraft and personnel assigned to them.

3.3.3. Technicians perform maintenance.

3.3.4. Designate a crew chief for each aircraft to coordinate each aircraft's production with the production superintendent or expeditor. The crew chief remains with her or his aircraft through all phases of maintenance.

3.3.5. Prioritize personnel and equipment to meet the daily maintenance and flying schedule.

3.3.6. Assign job numbers and priorities to identified deficiencies for rapid repair and optimum availability. Prioritize maintenance repairs based on mission requirements and the maintenance schedule.

3.3.7. Use the following to establish maintenance repair priorities. Raising or lowering priorities will not necessarily require a corresponding change in the supply delivery priority. The maintenance repair priority and the supply delivery priority are normally identical. Use a less responsive supply delivery priority when the need time or date for a part does not justify the delivery time specified.

Priority 1. Supply delivery: ASAP. Use for primary mission aircraft within 12 hours of a scheduled launch on the following missions:

- Presidential directed missions supporting US forces in combat and national emergency plans and special weapons movement missions.
- Aircraft alert status.
- Related AGE, munitions, and munitions equipment assigned to these missions.

Priority 2. Supply delivery: ASAP. Use for:

- Primary mission aircraft and related AGE, munitions, and munitions equipment for first 8 hours after landing or start of recovery or within 6 hours of a scheduled launch or alert.
- Simulated generation during operational readiness inspections.
- Primary special weapons movement mission aircraft 48 hours prior to a scheduled launch.
- Aeromedical evacuation, rescue, and weather mission aircraft and related AGE, munitions and munitions equipment.
- All transient Federal Aviation Administration aircraft.
- Aircraft and equipment or related AGE requiring repair which is preventing or delaying student or maintenance training.

Priority 3. Supply Delivery: Not later than 1 hour. Used for:

- Primary mission air vehicles, engines and related AGE, munitions and munitions equipment, undergoing scheduled or unscheduled maintenance.
- Transient air vehicles not otherwise listed.
- Administrative aircraft within 8 hours of scheduled flight or on alert status with standby crews.
- Time change requirements for nuclear weapons.
- Scheduled and unscheduled maintenance of munitions which if not performed will prevent or delay mission accomplishment.

- Precision measurement equipment (PME) requiring emergency repair or calibration, the lack of which will prevent or delay mission accomplishment.
- Spares not available in supply.
- Critical end items and reparable spares or supply designated "priority repair" spares.
- Routine maintenance of air crew or missile training simulator, or other training devices or related AGE or sites and aircraft or equipment used for maintenance training.
- Avionics shop electronic AGE and automated test stations.

Priority 4. Supply Delivery: Not later than 4 hours. Used for:

- Routine or extensive repair of primary mission air vehicles, related AGE, and repair cycle assets.
- Administrative aircraft undergoing scheduled or unscheduled maintenance.
- Routine maintenance of AGE not otherwise listed above.
- WRM items due maintenance or inspection.
- Inspection, maintenance, and TCTO compliance of MSK or MRSP material.
- Scheduled calibration and unscheduled repairs on PME not listed above.
- Extensive repair of air crew or missile training simulator, or other training devices or related AGE.

Priority 5. Supply Delivery: Not later than 8 hours. Used for:

- Bench stock requirements.
- Fabrication and repair of aeronautical items not carrying a higher priority.
- Non-tactical or non-primary mission aircraft undergoing extensive repair.
- Time change requirements on non-nuclear items.

Priority 6. Supply Delivery: Not later than 12 hours. Used for fabrication and repair of non-aeronautical items, equipment, and other aeronautical requirements.

Priority 7. Supply Delivery: Not Applicable. Used for spares excess to base requirements.

3.4. Debriefing. All aircraft maintenance organizations establish a debriefing function for aircraft recovery. Perform a formal debriefing with automated aircraft records. Research debriefed discrepancies for repeat or recurring trends. Identify repeat and recurring discrepancies, annotate them as such in the discrepancy block of the AFTO Form 781A, and inform the production superintendent and expeditor. Effective debriefs directly impact time, money, and systems reliability. Assign thoroughly knowledgeable and qualified personnel to the debrief function. Additionally, the SMO and MS ensure the following:

- 3.4.1. An aircrew member attends the debriefing to report the condition of the aircraft and its equipment.
- 3.4.2. Debrief informs production personnel of delayed or deferred discrepancies on aircraft returning from extended periods off-station.
- 3.4.3. Use of appropriate MAJCOM forms for aircraft debriefing.

3.4.4. Debriefers annotate AFTO 781A entries as either mission capable (MC) or mission essential (ME) according to technical data and aircrew judgment. Assign status codes to aircraft according to AFI 21-103 and appropriate mission essential subsystems list (MESL) or minimum equipment listing (MEL) (if applicable).

3.4.5. Debriefers annotate debriefing forms with the words "repeat" or "recurring" in red as appropriate.

3.4.6. During debriefing debriefers remove the AF Form 664, **Aircraft Fuels Documentation Log**, from the forms binder and return it to the aircrew for delivery to their document control officer according to AFI 23-202, *Buying Petroleum Products and Other Supplies and Services Off-Station*.

3.4.7. When debriefing battle damage, the recovery organization uses AFTO Form 97, **Aerospace Vehicle Battle Damage Repair Debrief/Assessment Record**, 97A, **Aerospace Vehicle Battle Damage Repair Debrief/Assessment Record (Continuation Sheet)**, 781H, **Aerospace Vehicle Flight Status and Maintenance Document**, and 781A according to TO 1-1H-39, *Aircraft Battle Damage Repair General Technical Manual*.

3.5. Dispatching Personnel and Equipment. Flightline expeditors request assistance in a number of different ways. Common to the process of requesting external assistance is the use of a maintenance coordination function. This function coordinates between the flightline and the Logistics Group Maintenance Squadron to obtain assistance beyond flightline capabilities. Personnel dispatched through the maintenance coordination function are monitored through job completion.

3.6. Special Certification Roster (SCR).

3.6.1. List individuals authorized to perform production inspections on the SCR. Include the following minimum tasks (separately or in combination) on the SCR:

3.6.1.1. Clear red X primary AFSC.

3.6.1.2. Perform IPI primary AFSC, CM and CMM.

3.6.1.3. Clear red X CUT AFSC.

3.6.1.4. Perform IPI CUT AFSC (for CUT, list each AFSC in which the individual is authorized to clear red Xs or perform IPIs, e.g. clear red X pneu, clear red X electronics).

3.6.1.5. Sign condition tags.

3.6.1.6. Authorize not reparable this station (NRTS).

3.6.1.7. Sign exceptional release.

3.6.1.8. Authorize engine run (engine run may be sub-divided into power levels) and hot refueling by position.

3.6.2. MAJCOMs add other mandatory critical tasks or inspections they deem necessary. Identify each task on the SCR by a specific course code.

3.6.3. Production Inspectors.

3.6.3.1. Maintenance Supervisors/Superintendents and/or Squadron Maintenance Officers/Superintendents approve primary AFSC production inspectors based on their experience and technical expertise regardless of their assigned skill position. Authorize only NCOs with a 7-skill level or

higher as production inspectors. Seven skill level personnel may be production inspectors outside their primary AFSC only when specific CUT task qualification is documented in personnel training records.

3.6.3.2. Squadron commanders can authorized selected 5-skill level personnel, in the rank of SrA or higher, to serve as production inspectors waiving the 7-skill level requirement to facilitate the production effort. Waived 5-skill level personnel should be closely monitored and kept to the minimum required to accomplish the maintenance mission.

3.6.3.3. MAJCOMs are authorized to grant group commanders the authority to approve a limited number of selected 5-skill level personnel, in any rank, to serve as production inspectors for specific high volume maintenance tasks. All available training on these specific tasks must be satisfactorily completed prior to the individual's selection. This special authorization will only be granted when a critical shortage of qualified personnel exist.

3.6.4. SCR Documentation. MAJCOMs develop procedures to add individuals to the SCR. Flight and section chiefs review each individual's qualifications and send their names to the SMO or MS. The MS/Superintendent and/or SMO/Superintendent approve additions to the Special Certification Roster. On approval, the individual's workcenter supervisor loads the approved name into the automated tracking system. Flight and section chiefs retain their copy of nomination until they verify proper loading. Workcenter supervisors may revoke certification at any time. They follow-up those actions by deleting SCR certification.

3.6.5. All Systems Red X. Group commanders may authorize selected maintenance officers and senior NCOs to clear all red X conditions, all IPIs, and red X downgrade according to 00-20-series TOs except those which require specific task certifications (e.g. egress, munitions, welding). Track "all systems" qualifications in the automated system. Group commanders are the only approval authority for all systems red X and all systems IPIs. Group commanders approve this authority by letter. Quality Assurance updates a master listing quarterly, and maintains a copy on file.

3.6.6. Clearing Repeat and Recurring Discrepancies. Only technicians with a 7-skill level or higher or CMs and CMMs can sign the "inspected by" block for discrepancies identified as "repeat" or "recurring."

3.7. In-Process Inspections (IPI). Accomplish IPIs in accordance with TO 00-20-1, *Preventive Maintenance--General Requirements*. The squadron maintenance officer and/or maintenance supervisor compile a list of squadron tasks requiring IPIs. They submit this list to their respective quality assurance section for group commander approval. Publish IPIs in a standard publication.

3.7.1. Documenting IPIs. Enter "IPI required at step (number)" in the discrepancy block of the applicable forms and automated system narrative. The person doing the task notifies an IPI certifier at the appropriate step. The certifier then complies with the IPI and enters their signature (employee number in automated systems) and rank next to the IPI statement in the corrective action block. IPI documentation in an automated system is not required for off-equipment engine work. Document those IPIs in the engine work folder. IPIs will be reviewed for applicability annually.

3.8. Inspection Section. The inspection section performs major and minor isochronal, phase, or periodic inspections. Units determine if the inspection section also performs preflights, basic post-flights, hourly post flight, thruplights, TCTOs, home station checks, refurbis, and special inspections. Inspections

normally consist of pre-inspection, look, fix, and post-inspection phases. Develop inspections according to TO 00-20-1. Applicable -6 series TO's list required inspection items. TO 00-20-5 identifies the different types of inspections. The facilities and type and number of aircraft assigned may dictate the need for dock chiefs and dock coordinators. For quality inspections, unit inspection sections:

- 3.8.1. Ensure control of the specialists and parts to complete the inspection.
- 3.8.2. Ensure all maintenance actions are documented.
- 3.8.3. Prepare the aircraft for functional check flight (FCF) if required.

3.9. Aerospace Ground Equipment (AGE) Flight. The AGE flight provides pickup, delivery, troubleshooting, scheduled and unscheduled maintenance, modification, inspection, and service of powered/non-powered AGE.

- 3.9.1. In support of the maintenance production effort, the AGE flight:
 - 3.9.1.1. Coordinates with the production superintendent to establish critical levels of AGE (by type and quantity) and status reporting requirements.
 - 3.9.1.2. Manages the AGE operator training program.
 - 3.9.1.3. Schedules inspections and major maintenance for powered and non-powered AGE.
 - 3.9.1.4. Provides servicing, inspection, minor maintenance, and dispatch of powered AGE, and dispatch of non-powered AGE to the non-powered AGE subpool.
 - 3.9.1.5. Manages AGE tow vehicles and controls their operations.
 - 3.9.1.6. Coordinates and reports equipment movement and status changes of AGE to the maintenance coordination function and the flightline expediter.
 - 3.9.1.7. Performs scheduled inspections and maintenance on common non-powered AGE.
 - 3.9.1.8. Performs maintenance on other equipment directed by MAJCOM or local policy.
- 3.9.2. When assigned to the AGE flight, the AGE scheduling, and documentation function:
 - 3.9.2.1. Plans and schedules TCTO actions.
 - 3.9.2.2. Plans, controls, and prioritizes all unscheduled and scheduled maintenance sent to the repair section, based on the critical AGE listing.
 - 3.9.2.3. Monitors progress of AGE maintenance.
 - 3.9.2.4. Controls and monitors the awaiting maintenance (AWM) and awaiting parts (AWP) file for AGE.
 - 3.9.2.5. Maintains the master identification number list.

Chapter 4

DOCUMENTING MAINTENANCE

4.1. Forms. Document aircraft and equipment maintenance forms accurately and completely. Maintenance forms documentation is the responsibility of both technicians and supervisors. Use automated forms when available. The automated form must contain the same data elements as the official form. Use the policies in AFI 37-160, volume 8, and TO 00-20 Series to initiate and maintain Air Force or AFTO forms. [Attachment 2](#) contains a listing of maintenance forms.

4.2. Symbols. Use symbols in maintenance documents to identify the status of aircraft and equipment. Air Force TO 00-20 Series TOs contain specific guidance for these symbols.

4.3. Automated Systems Management. Improve the management of maintenance operations and increase productivity, by using automated maintenance management systems. Use computer systems for planning, scheduling, and documenting maintenance actions. [Attachment 4](#) contains a listing of some automated maintenance management systems.

4.4. Records Reviews. Review and validate aircraft and aircrew training device documents periodically. Compare on-equipment record entries against those in the automated system. Reconcile any differences immediately. MAJCOMs specify frequency and documentation requirements.

4.5. Required Reports. Follow the guidance in automated maintenance systems' documentation; TO 00-20-2, *Maintenance Data Collection System*; TO 00-25-254-1, *System Manual--Comprehensive Engine Management System (CEMS) (DO42) Engine Status, Configuration, and TCTO Reporting Procedures*; and AFI 21-103 to determine reporting requirements, methods, and formats.

4.6. Automated Products and Formats. Automated products or formats (i.e. database, spreadsheet, word-processing, etc.) may be authorized for use.

Chapter 5

QUALITY ASSURANCE

5.1. General. Organizations performing aircraft maintenance must continually assess their performance aiming to improve results for two major customers--the operators and the aircraft. This dual allegiance of aircraft maintenance leads to a balancing act where maintainers are challenged to meet operator requirements and still maintain equipment to the highest technical standards. Capturing the essence of this challenge the Air Force defines Quality Maintenance as: "Meeting or exceeding aerospace equipment technical specifications and a customer's requirements through the effective integration of management; people; technical data; workplace; and equipment, supplies, and services." Within this definition units will find the building blocks for initiating assessments and examining the processes they use to meet customer requirements. Units assess how well they meet or exceed aircraft, support equipment, or component technical specifications and the needs of the operators of that equipment. Investigating the impact of management; people; technical data; workplace; and equipment, supplies and services in any process will uncover areas of opportunity for improvement. This chapter identifies those important elements, present within any aircraft maintenance operation, which units must assess to determine the quality of their maintenance. MAJCOMs must define the specific assessment system units employ to assess these elements. The Air Force allows considerable latitude in those systems to accommodate MAJCOM requirements so long as a consistent and credible assessment program exists which continually measures these elements. Each Group with an aircraft maintenance function administers this program through Quality Assurance (QA). Quality Assurance administers certain other central technical functions. Quality Assurance ensures collection and presentation of performance measures, facilitates process improvement efforts, investigates problems, and communicates with agencies outside the unit on technical maintenance matters.

5.2. Quality Maintenance Objectives. The Air Force considers the following objectives the gauge for determining maintenance performance. Success within these areas inevitably fulfills maintenance's most important customer requirements.

- Timely delivery of reliable, mission-ready aerospace equipment.
- Safe people, equipment, and procedures.
- A competent workforce that is effective, accountable, and responsive.
- Adherence to prescribed directives.
- Accurate reporting and documentation.
- Responsible and efficient use of available resources.

5.2.1. Measuring performance against these objectives provides any aircraft maintenance activity insight on where it needs to improve. **Attachment 5** to this instruction provides the Air Force operational definitions for metrics which units must use to assess their performance. Report these metrics using RCS report number, HAF-LG (Q) 9603, *Quality Maintenance Metrics*, by message or data base through your MAJCOM to HQ USAF/LGMM on the interval required in the metric operational definition. Tracking performance against these metrics provides feedback whereby each objective is addressed and ultimately improved. All MAJCOMs must ensure their units have a system which gathers requisite data to generate meaningful metrics. Within this system, MAJCOMs must identify

procedures to ensure reviews of processes affecting metrics. These process reviews constitute the most important function in each MAJCOM's maintenance quality assessment. Because the collection and review of metrics alone does not drive improvement, units must strive to understand and improve the processes which affect each metric. Reviewing processes will help target areas requiring improvement. Improving those areas will drive each metric in the desired direction, thereby improving maintenance quality.

5.3. Unit Level Measures. The metrics in [Attachment 5](#) provide indications of customer satisfaction. They are useful in determining how well maintenance is performing, but alone, may not be enough for managers to use for direct action. For this reason, units must develop metrics relevant to their unique operation which quantify processes managers can change. Because different missions, climates, facilities and a host of other variables create varied maintenance processes for each wing, units will often develop unique paths to improvement. Along each path, units will find critical elements which must either be present or done correctly to ensure success. Unit level metrics will help managers determine the effects of change on their processes. Unit level metrics provide maintenance managers with a barometer that can be used to manage a shop or flight. They provide managers tools to drive quality maintenance objectives in the appropriate direction. The following factors are important and will provide managers a starting point in analyzing how to improve maintenance quality.

- Technically Proficient, Trained People.
- Safe Equipment, Supplies, and Services.
- Available Equipment, Supplies, and Services.
- Motivated People.
- Safe People.
- Resource Utilization by Management.
- Safe Workplace.

Units seeking to effect changes in the factors listed above can generally look to the following drivers. Changing these drivers can have a considerable effect on maintenance quality.

- Leadership.
- Supervisory Management Skills.
- Management Policy.
- Tech Data Content.
- Technically Proficient, Experienced People.
- Management Control of Maintenance Actions.

5.4. Responsibilities.

5.4.1. Group Commanders. Group Commanders ensure their organization assesses maintenance quality. They receive feedback through Quality Assurance and use it as a catalyst for improvement. Through QA Group Commanders also control certain key qualification and certification procedures:

5.4.1.1. Establish a quarterly maintenance quality meeting which presents an assessment of maintenance performance (assess the metrics in [Attachment 5](#) as a minimum) and actions taken to improve maintenance processes.

5.4.1.2. Request process reviews for areas demonstrating trends not conducive to quality maintenance.

5.4.1.3. Develop qualification criteria for hazardous maintenance operations. MAJCOMs identify critical operations and provide minimum criteria.

5.4.1.4. Assume responsibility for Air Force Engineering and Technical Support (AFETS) personnel.

5.4.2. Squadron Commander. Squadron Commanders are responsible to group commanders for overall squadron management. They ensure quality maintenance by providing guidance and support across a wide spectrum of activities. The squadron commander:

5.4.2.1. Enforces sound maintenance, supply discipline, and resource management practices.

5.4.2.2. Ensures strict adherence to technical data, management policies, and procedures.

5.4.2.3. Ensures sufficient personnel are authorized and assigned to support mission taskings and perform quality maintenance.

5.4.2.4. Ensures adequacy of squadron training, maintenance qualification, and assessment programs.

5.4.2.5. Ensures effective safety and quality programs.

5.4.2.6. Represents the squadron at Group Commander quarterly maintenance quality meetings.

5.4.2.7. Ensures collection of data for unit level measures.

5.4.3. Squadron Maintenance Officer/Maintenance Supervisor and Maintenance Superintendent. The Squadron Maintenance Officer and/or the Maintenance Supervisor/Superintendent play pivotal roles in the unit's effort to improve maintenance quality. They must ensure supervisors and technicians participate in reviewing maintenance processes. Without aggressive involvement from maintenance supervision, the unit quality assessment program will not be effective. The Squadron Maintenance Officer/Maintenance Supervisor/Superintendent:

5.4.3.1. Ensure accomplishment of administrative functions required by all unit maintenance flights, including but not limited to: maintaining currency of prescribed technical data and procedural guidance; and collection of data required to support the unit assessment program.

5.4.3.2. Review corrective actions recommended for problems detected as a result of process reviews.

5.4.3.3. Work with Quality Assurance to facilitate process reviews.

5.4.3.4. Recommend areas for process reviews to Quality Assurance.

5.4.4. Flight Chiefs. Flight Chiefs control maintenance processes and the people contributing to those processes. Their involvement in process reviews are critical to ensure any proposed change is understood and viable. Flight Chiefs ensure their personnel understand the purpose of the unit's assessment programs and provide necessary support. Flight Chiefs:

5.4.4.1. Provide personnel to participate in process reviews.

5.4.4.2. Ensure collection of data for unit level measures.

5.4.4.3. Implement process review corrective actions.

5.4.4.4. Review processes and unit level measures to identify potential problems. If problems exist the Flight Chief notifies the Squadron Maintenance Officer or Maintenance Supervisor and recommends corrective actions.

5.4.5. **Quality Assurance.** Quality Assurance is the focal point for oversight of technical activities. It administers the overall group assessment program, manages the weight and balance program, controls one-time inspections, coordinates functional check flights, houses the wing's Technical Order Distribution Office (TODO), and manages the Wing's Product Improvement Program as outlined in AFI 21-118, *Improving Aerospace Equipment Reliability and Maintainability (R&M)*. The following paragraphs provide specific responsibilities for each area.

5.4.5.1. **Group Assessment Program.** Maintenance quality is the responsibility of every supervisor and technician assigned to the unit. Quality Assurance provides administration for the overall assessment program. It serves as a source of quality techniques and assists maintainers in initiating process improvements. MAJCOMs develop specific procedures for their Quality Assessment Program. Personnel assigned to administer the assessment program should be trained in techniques used to assess, track, analyze, and revise maintenance processes. These techniques include statistics, quality tools, and team facilitation. Responsibilities include:

5.4.5.1.1. Ensuring collection of performance data necessary to generate the metrics in [Attachment 5](#) and other unit level measures.

5.4.5.1.2. Presenting these metrics in a quarterly briefing to the Group Commanders.

5.4.5.1.3. Assisting maintenance activities in process reviews.

5.4.5.1.4. Assessing the products produced by the maintenance analysis section and other data to develop proposed process reviews.

5.4.5.1.5. Validating maintenance quality by sampling the quality of maintenance performed, the condition of assigned aircraft, the serviceability of equipment, and the steps followed to execute the maintenance effort.

5.4.5.1.6. Recording the results of process reviews on AF Form 2422, **Maintenance Analysis Referral**.

5.4.5.1.7. Briefing recently completed process reviews at the quarterly group quality assessment program meeting.

5.5. Functional Check Flights (FCFs). FCFs ensure an aircraft is airworthy and capable of accomplishing its mission. Additional guidance may be found in AFI 11-401, *Flight Management*, AFI 11-206, *General Flight Rules*, TO 1-1-300, *Functional Check Flights*, TO 00-20-5, and applicable -6 and -1 technical orders. The Operations Group Commander (OG/CC) is responsible for appointing an OIC for management and administration of the program. The OIC of FCFs is FCF qualified in a unit mission aircraft, attends the Aircraft Maintenance Officer Course (accelerated), has previous FCF experience, and can serve as checkout pilot in mission aircraft. The OG/CC is responsible for reviewing qualifications of all

assigned crews and selecting highly qualified individuals. OG/CCs establish and implement local FCF procedures in accordance with applicable directives. The Officer in Charge FCFs:

- 5.5.1. Develop appropriate FCF checklists and procedures and coordinate them with QA.
- 5.5.2. Establish an FCF checkout and continuation training program.
- 5.5.3. Analyze FCF/operational check results on a continuing basis and recommend modified FCF criteria and procedures.
- 5.5.4. Work with maintenance and operations in areas of flying safety, standardization, and operational maintenance priorities with respect to the FCF program.
- 5.5.5. Ensure each FCF crew is briefed on the purpose of the FCF, all previous maintenance problems, and discrepancies recorded on the aircraft and the system/equipment relating to the FCF.
- 5.5.6. Review aircraft weight and balance documents.
- 5.5.7. Ensure AF Form 2400, **Functional Check Flight Log**, or an automated product is maintained to provide information for evaluation and analysis. Include in the log the date and time of the FCF, aircraft serial number, reason for FCF, names of debriefer, and name of aircraft commander. The Functional Check Flight Log also shows if the aircraft was released for flight, reasons for any non-release, action taken and date completed, and date maintenance documents were forwarded to PS&D.
- 5.5.8. Flight Requirements. The mandatory requirements for an FCF are outlined in TO 1-1-300 and the -6 TO Determine the FCF profile by the discrepancy causing the FCF. Fly a full profile FCF at the discretion of the FCF OIC. Tailor the FCF profile for the discrepancy causing the FCF. Apply the following guidance:
 - 5.5.8.1. Fly FCFs for a single engine change on a two engine aircraft if that aircraft will next fly an extended over-the-water flight, i.e., overseas deployment. This applies to engines with no operating time since major maintenance. It does not apply to engines obtained from donor aircraft with established operating time.
 - 5.5.8.2. Require a clean configuration whenever FCFs are flown for flight controls, fuel controls, or engine changes. Do not remove fixed wing pylons, fixed wing tip tanks, and fixed external stores unless they interfere with fuel scheduling, aerodynamic reaction, air loading, signaling propagation, etc.
- 5.5.9. Operational Check Flight (OCF). Fly OCFs when an operational check is not listed as a -6 FCF requirement and when either of the following conditions exist:
 - Test equipment does not exist to perform the operational check on the ground.
 - An in-flight operational check is required by -1 and -2 technical data.
- 5.5.10. High Speed Taxi Checks. Perform high speed taxi checks with FCF air crews according to applicable aircraft -1 and maintenance technical orders. To minimize brake and tire wear, configure aircraft with the minimum fuel practical to accomplish high speed taxi checks. Ensure enough fuel is on board to execute a takeoff, normal pattern, and landing with applicable reserves if unexpected circumstances require take-off.
- 5.5.11. FCF Aborts. All ground aborts result in a non-release. An aircraft may be released for flight if a malfunction occurs during an FCF, which is not related to the condition generating the FCF, and the original condition checks good.

5.6. Weight and Balance (W&B) Program. Maintain strict accounting of aircraft weight and balance for safe flight operations. Each unit manages a Weight and Balance program, ensuring accurate inventories of aircraft weight. The Group Commander appoints a QA individual to be the unit weight and balance program manager.

5.6.1. Weight and Balance Manager Responsibilities. The weight and balance program manager ensures compliance with appropriate technical order procedures for weighing aircraft and maintains required documents. The W&B program manager carries out his/her responsibilities with assistance of squadron W&B technicians. The weight and balance technician verifies scale readings and does the actual computations. The weight and balance technician supervises the preparation, leveling, and weighing of the aircraft. The W&B program manager ensures:

5.6.2. Sufficient personnel are qualified on assigned aircraft according to TO 1-1B-50.

5.6.3. Weight and balance inventories are completed according to applicable directives and upon return to home station from any ALC or contractor facility where extensive maintenance was performed. Complete weight and balance inventories prior to the first flight after arrival.

5.6.4. All assigned aircraft are weighed according to applicable directives. Keep weight and balance documents required by TO 1-1B-40, *Weight & Balance Data* and TO 1-1B-50, *Basic Technical Order For USAF Aircraft Weight & Balance*, for each assigned aircraft. If approved, use an automated weight and balance system. If an approved automated weight and balance system is used, keep a back-up copy of all weight and balance documents.

5.6.5. Procedures exist for routing completed TCTO and modification information for weight and balance changes.

5.6.6. Inspection of weight and balance documents before flight when locally accomplished modifications affect the basic aircraft weight and moment. Review computations for accuracy.

5.6.7. Essential weight and balance data and changes to the basic weight and moment are available for appropriate mission planning.

5.6.8. Weight and balance handbooks for class I and II aircraft are kept in a central file.

Chapter 6

MAINTENANCE SUPPORT

6.1. Decentralized Supply Support. The chief of supply is accountable for providing supply support in the form of parts and personnel to maintenance activities. Decentralize supply personnel and parts to the maximum extent possible. These personnel coordinate maintenance and supply actions, manage supply transactions for their assigned maintenance activity, manage the production of assets in the repair cycle, or resolve supply support problems. They assist maintenance in processing requisitions, researching sources of supply, completing DD Form 1348-6, **DoD Single Line Item Requisition System Document**, entering manual requisitions (part number only), updating exception code lists, and other peculiar maintenance supply problems.

6.2. Ordering Parts. Order aircraft parts from supply through either the automated maintenance system's supply interface or through decentralized support arrangements. Monitor supply status on all backordered parts. Request supply assistance if status is unacceptable. Technicians ordering parts:

6.2.1. Provide required data to facilitate the issue request. See AFMAN 23-110, volume II, part two, and AFMAN 23-110, volume II, part 13.

6.2.2. Complete AF Form 2413, **Supply Control Log**, or locally developed computer log, and include supply document number and time ordered. Use printouts of requests made via supply interface in lieu of AF Form 2413 or computer log.

6.2.3. See TO 00-20-5, *Aircraft, Drone, Aircrew Training Devices, Engines, and Air-Launched Missile Inspections, Flight Reports, and Supporting Maintenance Documents*, and AFMAN 23-110, volume II, part two, when ordering parts for transient aircraft. Use demand code N (non-recurring) for transient aircraft requests. Use demand code R (recurring) if the item is for a base assigned aircraft or for regularly scheduled transient flights.

6.2.4. Supply Discipline. Supply discipline is the responsibility of all military and civilian employees regardless of grade or position. Supervisors, at all levels, ensure the practice of good supply discipline. Train all maintenance personnel to perform supply duties related to their job. They must understand:

6.2.4.1. A repairable item is as important as a serviceable item, since the repairable may be the only part available. Therefore, promptly process repairable items.

6.2.4.2. How to assign a valid supply delivery priority to each demand. AFMAN 23-110, volume II, part 13 identifies these priorities.

6.2.4.3. Actions to cancel erroneous requests.

6.2.4.4. Force activity designators (FAD) assigned to each Air Force unit based on the Air Force program document. Use this code with the urgency of need designator (UND) to set the requisition priority. When supporting a unit with a higher FAD, use the FAD of the supported unit.

6.2.4.5. The use of urgency justification codes (UJC).

6.2.4.6. How to verify and monitor backordered requests to prevent unwarranted mission limiting conditions, cannibalizations, priority abuses and wasted money. AFMAN 23-110, volume II, part two, chapter 11, identifies verification requirements.

6.2.4.7. The requirement to recycle reusable containers and metals.

6.2.4.8. How to turn in excess materiel.

6.2.4.9. The importance of recording usage of an item in the supply system by processing TRNs. If the removal and replacement is not processed in supply it may never be stocked or may be under stocked.

6.2.4.10. DIFM inputs are critical to recording and getting credit for proper repair cycle times. DIFM status codes are currently broken down into three categories, delayed maintenance time, repair time, and AWP time. Repair time is the only time recorded and used to determine the number of assets base supply can stock. Not using the proper codes, when they change, reduces the number of assets on base. Additionally, since credit is not given for delayed maintenance time or AWP time these should be reduced to as near zero as possible.

6.2.5. Bench Stocks:

6.2.5.1. Workcenter supervisors determine the contents of their bench stock. Establish levels to provide 60 days usage. Retain quantities over the authorized level.

6.2.5.2. Managing Bins:

6.2.5.2.1. Mark bins containing 50 percent or less of the authorized quantity to facilitate monthly inventories. Do not include items coded TCTO, unacceptable for Air Force use, critical, classified or sensitive in bench stocks. (See AFMAN 23-110, volume II, part two, for exception data.)

6.2.5.2.2. Control and secure any precious metals displayed.

6.2.5.2.3. Place bench stock items not in their original package in a sealed package. Clearly mark them to avoid mistakes.

6.2.5.2.4. Remove unidentifiable items, or items whose serviceability is unknown, from bench stock bins and process them as shop scrap through the Defense Reutilization and Marketing Office.

6.2.5.3. Set up fixed or mobile bench stocks to provide quick and easy access to bits and pieces needed to support maintenance efforts. Ensure mobile bench stocks do not present a foreign object damage hazard.

6.2.5.4. Bench stock shadow boards are optional. Use unserviceable items for those boards.

6.2.5.5. Identify and control the issue and turn-in of hazardous materiel/items on Bench Stock listings. See AFMAN 23-110, volume II, part two, and part 13 for additional guidance on establishing, maintaining, and reviewing bench stocks.

6.2.6. Shop Stock. Maintain shop stock for day to day operations. Monitor shop stock to prevent materials from becoming excessive or outdated. Mark shop stock by noun, national stock number or part number, and unit of issue.

6.2.7. Operating stock. Store operating stock items near bench stock items. Do not mix them together. Mark operating stock bins with, national stock number or part number, unit of issue, noun, and shelf-life. Monitor operating stock to prevent it from becoming excessive or outdated. Retain partially used bench stock items in bench stock and not in operating stock. Identify, tag and turn in items with no forecasted use according to AFMAN 23-110, volume II, part 13.

6.2.8. **Special (Adjusted Stock) Levels.** Adjust base supply stock levels to prevent an out of stock condition. Adjusted levels are used when the demand level or consumption is inadequate to support the requirement. A single occurrence of a mission limiting status is not sufficient reason to establish an adjusted stock level. It may indicate a need to review demand data for accuracy. Use AF Form 1996, **Adjusted Stock Level**, to establish supply levels for support of special projects, special operating requirements, or if existing demand data is insufficient to support mission requirements. Workcenters, with assistance from supply personnel, prepare the AF Form 1996 and route it through the SMO, MS, or maintenance squadron maintenance supervisor for review. See AFMAN 23-110, volume II, part two, for criteria and procedures for submitting these requests. Prior to submission to base supply, ensure the AF Form 1996 contains adequate justification and is approved by the group commander. Workcenters maintain a master file of adjusted stock levels and follow-up on requests. Supply personnel and the appropriate workcenter accomplish a validation of adjusted stock levels according to AFMAN 23-110, volume II, part two.

6.2.9. **Shelf-Life Items.** Workcenters control shelf-life items in bench stock and operating/shop stock according to AFMAN 23-110, volume VII, part three. Base supply identifies shelf life items by use of colored bin labels. This label contains the item's shelf life code (AFMAN 23-110, volume II, part two). Mark operating and shop stock labels with the shelf-life codes and source (e.g. TO number, etc.). Contact the base supply inspection section to determine shelf-life if conflicts exist between the various sources. Check expiration dates on issued items and do not accept outdated items from supply. Do not open shelf-life containers until needed and use the oldest items first. Recycle, reclaim, or turn-in for disposal, shelf-life items which are loose in the bin and the expiration date cannot be determined according to type I shelf-life criteria. Inspect type II shelf-life items according to applicable technical data.

6.2.10. **Repair Cycle Assets.** All units establish a repair cycle support element or flight service center to monitor and control progress and status of repair cycle assets. Process repair cycle assets according to TO 00-20-3. Units establish local procedures for the control of repair cycle assets throughout the maintenance cycle. Include methods of accounting for all components and accessories, procedures for control of assets in AWP or AWM status, and procedures and responsibilities for cross cannibalization, removal of bits and pieces, and scheduling and control of repair cycle assets. Promptly process, repair, and return repairable components to the repair cycle support element. Repair assets to the fullest extent authorized within unit capabilities.

6.2.11. **EOQ/XB3 Turn-In.** Place EOQ/XB3 pick-up point containers in or near each maintenance workcenter to encourage turn-in of unneeded items. Make the containers easily accessible and visible. Workcenter supervisors periodically inspect containers for unauthorized items. AFMAN 23-110, volume II, part two, contains detailed procedures.

6.2.12. **Tail Number Bins (TNB).** Place all due-out release (DOR) items in the TNB and inform the maintenance coordination function and expeditor (for MICAPs) or the flying squadron PS&D (for backordered items) that the part is in. Do not release parts from the TNB without proper documentation. Return items removed from the TNB that are not installed that duty day. Inform the production superintendent or expeditor of TNB assets which may prevent or satisfy a mission-limiting condition. TNB items used to satisfy MICAP conditions are not cannibalizations. Reorder these items and notify the expeditor of the new document number. Update the aircraft forms and automated maintenance system. If supply creates a due-out prior to transfer of these items, notify base supply to change the "mark-for" field on the due-out detail. Seal and store partially completed TCTO kits and parts in the

TNB and mark the container or package with the tail number, serial number, or equipment identification number and TCTO number. Maintain security and control of TNB assets. Track property placed in the TNB by tail number, serial number, or equipment identification number. For each entry indicate:

6.2.12.1. Date received.

6.2.12.2. Noun.

6.2.12.3. Document number.

6.2.12.4. Status (facilitate other maintenance (FOM), ISU/DOR, TCTO, etc.)

6.2.12.5. Removal information (date, time, signature, and employee number of the person who picked up the property).

6.2.12.6. Remarks.

6.2.13. Cannibalization. Cannibalization actions may be necessary when a not-mission capable (NMC) condition will prevent the accomplishment of a mission and the required assets are not immediately available from supply. Prior to cannibalization action, verify that the required component cannot be sourced from on-base assets within the allotted time. In addition, the cannibalization decision authority considers man-hour availability and the risks of damaging serviceable equipment. Document cannibalizations according to automated maintenance systems' documentation and process according to TO 00-20-2. Additional local guidance for cannibalization actions should identify restrictions, specific procedures, individual responsibilities, and documentation requirements.

6.2.14. Removal of Bit and Piece Repair Parts from Condemned Assets. Remove selected bit and piece repair parts from condemned XF/XB end items. Do not remove bit and piece repair parts from XD assets returning to the depot without item manager approval. Condemnation authority for XD assets is provided by the end item manager. Once condemnation authority for an XD asset is received from the item manager, remove all serviceable and repairable XD SRUs. Bench check all XD SRUs and process all serviceables for turn-in to base supply as "found on base." Determine if the unserviceable XD SRUs repair cost exceeds 75 percent. If repair exceeds 75 percent of cost, reinstall the SRU into the condemned LRU and turn-in the LRU to base supply through the normal due-in from maintenance (DIFM) process. Also, remove serviceable bit and piece parts. Store XB bits and pieces as operating stock or turn-into supply.

6.2.15. Quick Reference Lists (QRL). In conjunction with LSS, OSS MSL solicits and consolidates inputs from all squadrons to initiate a QRL. MSL distributes the QRL to appropriate workcenters including the aircraft parts store. Accomplish review and validation at least semiannually. The review will include TO research to ensure listing of preferred items. Maintenance activities submit proposed additions to the QRL by stock and part number, work unit code, and TO, figure, and index number. Print the listing by primary air vehicle system using a local format.

6.2.16. Critical Items. The critical item management system identifies and prioritizes supply management for selected items. Provide critical items with premium management to control their issue and repair, to expedite them to the user, and reduce cannibalizations. Each section chief is the work-center critical item monitor. Identify critical items on DD Form 1348-1/1348-1A, **Release Receipt Document**, and the D23. For additional information on critical items, see AFMAN 23-110, volume 1, part one. Maintenance critical item monitors:

6.2.16.1. Determine items to add to or delete from the base critical item list.

6.2.16.2. Identify critical items exceeding processing time objectives and determine reasons for not meeting objectives.

6.2.16.3. Bench check, repair or NRTS critical assets before non-critical assets. Repair critical assets within their priority group.

6.2.17. Equipment Items. Continually review equipment items needed for mission accomplishment. Maintain them in a serviceable condition. Supply personnel provide technical assistance to equipment custodians by researching and preparing documents for gaining authorizations and ordering equipment items. Equipment custodians request equipment, tools and bench mock-ups using AF Form 601, **Equipment Action Request**, or 2005. Supply provides equipment custodians a custodian authorization and custody receipt listing (CA/CRL) listing all authorized and in-use equipment for each account. Check the appropriate allowance standard (AS) for authorizations. See AFMAN 23-110, volume II, part 13, for procedures on appointing equipment custodians, setting up the proper accounts, ordering, and maintaining equipment items.

6.2.18. Supply Assets Requiring Functional Check, Calibration, or Operational Flight Programming. Maintenance sections identify items requiring functional check, calibration, or operational flight programming prior to use. Prepare a list of items, including the repair section's organization and section code, and send the list through the flight OIC or chief and squadron maintenance officer or maintenance supervisor to base supply's inspection section. The list is updated/validated semiannually. Supply sends items identified on the list to repair sections when functional check, calibration or programming is due or when serviceability is doubtful.

6.2.19. Supply Points. Establish supply points within individual workcenters when time or resources required to move items dictate a need. Storage space for the supply points is provided by the supported workcenter. Determine management of the supply point by agreement between the group commanders. Inventory supply point assets semi-annually. The workcenter supervisor assists base supply with these reconciliations and inventories. Establishment of an aircraft parts store and/or flight service center within the maintenance complex reduces the dependence on supply points and or bench stocks. Supply maintains warehouses in both these facilities, stocking assets closer to the point of use. Expenditure of funds and manpower may be reduced by use of these facilities.

6.2.20. Buildup Items. Maintain items requiring build-up prior to use (i.e. wheels and tires) in supply points in a built-up configuration. Send items to appropriate workcenters for build-up and return them to the supply point for later issue. Use AF Form 1297, **Temporary Issue Receipt**, to control assets sent for build-up when the supply point is operated by supply. Validate AF Forms 1297 daily if over 10 days old. Establish local procedures to control assets when maintenance operates the supply point and assets are sent to another organization for build-up.

6.2.21. Supply Reports and Listings. Use supply reports and listings to manage maintenance requirements. Most are provided automatically or generated after supply transactions. Request others when needed. **Attachment 3** lists the most common/important reports and listings.

6.3. Tools Issue Sections.

6.3.1. Composite Tool Kit (CTK). The composite tool kit contains tools and equipment necessary to accomplish maintenance tasks, troubleshooting, and repair. Design CTKs to provide a quick inventory and accountability of tools. Clearly mark all CTKs and tools with the owning organization.

Develop local procedures to determine which tools are checked out and who has them. Inspect all tools periodically for serviceability according to TO 32-1-101, *Maintenance & Care of Hand Tools*. Mark mobility tool boxes according to AFI 10-403, *USAF Mobility Planning*.

6.3.2. Tool Room Operation. Tool issue sections store and issue tools and equipment for a workcenter. Limit tool issue sections to one per workcenter. Establish procedures to ensure custodial control. The SMO/MS, determines responsibility for tool room operations. Set up tool rooms to ensure positive accountability. Process tools that are lost, damaged, destroyed, or become unserviceable according to AFMAN 23-220. As a minimum, conduct a yearly inventory of all non-expendable tools and equipment.

6.3.3. Lost Tool Procedures. Units develop a local tool control directive that provides for the prevention of FOD to aircraft, engines, air crew training devices, and SE. Include procedures that provide for security, control, and accountability of tools. Include inventory procedures, intervals, methods of identification, and lost or missing tool procedures. On the flightline, immediately report missing tools to the flight OIC or chief, expeditor, production superintendent, sortie support flight, and maintenance coordination function. When a tool is missing on or near an aircraft, place a red X in the aircraft forms with a description of the tool. Include a specific, last known, location of the tool. Initiate a thorough search for the tool. Limit authorization to clear red-X's, when a tool cannot be located, to no lower than the SMO/MS and, their superintendents.

6.4. Workcenter Management. Workcenter management involves both the day-to-day management of resources and the evaluation of maintenance performed through inspection and observation. Workcenter supervisors evaluate the documentation of maintenance on both forms and the automated maintenance system. They also review production and equipment performance reports and identify and correct deficient areas. Managers follow housekeeping, safety, security, and environmental control practices. They ensure the use of technical data by all personnel performing maintenance. Maintenance workcenters:

6.4.1. Maintain AF Forms 2413 or AF Forms 2005 recording all parts ordered from base supply demand processing and verify status with the daily document register (D04) and the monthly due-out validation listing (M30). Use printouts of requests made via the supply interface in lieu of AF Forms 2005 and 2413. On receipt of parts, discard AF Form 2005 or place in an inactive file. Line through entries on AF Form 2413 until all parts on the page have been received, then discard or place in inactive file.

6.4.2. Follow-up with supply personnel to resolve AWP problems.

6.4.3. Establish procedures for controlling cross-cannibalization of reparable assets to reduce AWP units.

6.4.4. Process supply items requiring a buildup before issue in a timely manner.

6.4.5. Compile a list of items requiring functional check or calibration prior to installation. Review and update at least annually.

6.4.6. Compile a list of direct NRTS items and provide it to supply for inclusion in the master direct NRTS listing. Review and update at least annually.

6.4.7. Establish a storage area for reusable containers. Consolidation with other workcenters is authorized.

6.4.8. Schedule and control all repair cycle assets through the repair flights based on priority assigned.

6.4.9. Move repairable assets from workcenter to workcenter in an expedient manner. Ensure the proper documentation and container accompany the asset through the repair cycle.

6.4.10. Dispatch and Availability of Personnel. Maintenance squadron section chiefs provide the maintenance coordination function with technician availability at the beginning of each shift and as changes occur. Coordinate with the maintenance coordination function on maintenance priorities before dispatching personnel. The maintenance coordination function tracks availability of personnel. Use the automated maintenance system job following subsystem or a local devised system.

6.4.11. Local Manufacture. Units publish directives outlining procedures covering the manufacture of items source coded local manufacture. Include procedures that prevent abuses, specifies coordination requirements and approval authority. Local manufacturing is an essential part of unit maintenance support. The applicable end-item TO identifies items subject to local manufacture. Specific procedures are in AFMAN 23-110, volume II, part two, and AFMAN 23-110, volume II, part 13. When developing directives:

6.4.11.1. Identify the approval authority for local manufacture requests.

6.4.11.2. Requesters use an AF Form 2005 for supply item local requests. Use an AF Form 601 for equipment requests. Provide a drawing, sample, technical data and DD Form 1348-6, as required. Obtain drawings from the Base Engineering Data Service Center (EDSC). Use the Air Force engineering data program governed by AFI 21-401, *Engineering Data Distribution and Control*.

6.4.11.3. Requesters coordinate with the appropriate fabricating section to determine the bits and pieces required to manufacture the item. The supply local manufacturer manager assists in verifying parts availability.

6.4.11.4. Requesters identify all sections that have action on the AFTO Form 350, **Reparable Item Processing Tag**, for items requiring multiple section processing.

6.4.12. Bench sets and mock-ups. Inspect, calibrate and repair bench sets and mock-ups as required. Mark bench sets and their components as bench sets. Do not use either for completion of maintenance actions on aircraft.

6.4.13. Production Scheduling. The repair section chiefs establish a production schedule based on priorities. Base supply provides the repair cycle asset management listing (D23) to assist each repair section in this effort. The D23 is provided in both maintenance location and stock number sequence. Repair sections use the D23 to manage the flow of DIFM assets in the repair cycle and to ensure the DIFM status is updated.

6.4.14. Control of AWP Assets and Cross-Cannibalization. Closely control reparable assets in AWP status. Avoid consolidating storage areas for AWM and AWP assets. Group commanders negotiate storage of out-sized units. Provide the supply AWP manager the DIFM document number of the AWP end item and the due-out document numbers of bits and pieces to adjust supply database records for cross-cannibalization actions. Supply requisitions, initiates lateral support, and monitors the status of repair bits and pieces. Repair section asset managers identify unacceptable supply status impacts to the base supply AWP manager. Supply requests disposition for assets with unavailable repair parts. Only evacuate parts on receipt of disposition authority.

6.4.15. DIFM. Repair sections use the D23 to manage the flow of DIFM assets in the repair cycle and to update DIFM status. If a parts request is backordered and the unserviceable DIFM item does not limit or restrict the operational capability of the end item, remove it and send it to the applicable support section for either repair, not repairable this station (NRTS) approval, or condemnation with a subsequent turn-in to supply (as a credit DIFM) according to TO 00-20-3, *Maintenance Processing of Repairable Property and Repair Cycle Asset Control System*.

6.4.16. Bench Check and Repair Policy. Maintenance sections bench check items as part of the on-equipment troubleshooting process. When workload requires, the section chief determines the priority for bench check actions. Specific procedures for bench check and repair policy are provided in TO 00-20-3. The following general guidelines apply:

6.4.16.1. Order required parts fill or kill. If the part is not in stock and a MICAP condition exists, backorder the new request. Determine local repair capability before requisitioning off-base support or going lateral support.

6.4.16.2. Remove the suspected item, fill out the AFTO Form 350, annotate it as repair and return. Attach AFTO 350 to the item; place the item in the repair cycle; and annotate the name of the repair section on the form.

6.4.16.3. Bench-check, repair, take NRTS action, or condemn the item. If the item is repaired or otherwise determined to be serviceable, the repair section informs the support section the item is available for pick-up so on-equipment maintenance action may resume. If the item cannot be repaired, the repair section informs the support section to initiate a backordered request and takes appropriate NRTS and condemnation action on the unserviceable asset.

6.4.17. Maintenance Turn-Around Record Update (TRN) Processing. Workcenters processing TRNs maintain AF Form 2521, **Turn-Around Transaction Log**. The AFTO Form 350, part II, is processed using the supply interface to the automated maintenance system. Verify each TRN with the D04. Use TRN procedures only when due-out document numbers cannot be established.

6.4.18. Maintenance Turn-In to Supply. Workcenters properly tag and secure repair cycle assets in their reusable container. The repair shop complies with environmental control requirements, as specified in TOs. Place documentation with the container. Include AFTO Form 350, part I and II, and a condition tag or label with all items turned into supply. Enter the correct action taken code on AFTO Form 350, part II. Accomplish proper reclamation and demilitarization actions on condemned repair cycle assets. Also:

6.4.18.1. Destroyed TOP SECRET or SECRET material requires a receipt according to AFI 31-401, *Information Security Program*. Include a copy of the destruction certificate with the turn-in documentation.

6.4.18.2. Provide sensitive instruments interior container protection.

6.4.18.3. Ensure automated maintenance system products accompany all engine tracked items according to TO 00-20-3 and TO 00-20-5.

6.4.18.4. Ensure supply signs the DD Form 1348-1.

6.4.18.5. Ensure a copy of the LRU/SRU historical record accompanies turn-in of all items.

Chapter 7

SAFETY

7.1. Hazards. Avoid injuries to personnel and damage to equipment by following established procedures and directives, asking for help when needed, and using the appropriate personnel protective equipment (PPE). Control potential physical, fire, and health hazards by proper training prior to job accomplishment, appropriate work procedures, and supervisory controls. Managers and supervisors at all levels must recognize the sources of hazards and apply appropriate safety practices to minimize their effect.

7.2. Hazard Abatement Program. Implement and follow the Air Force Hazard Abatement Program to protect all Air Force personnel from work-related deaths, injuries, and occupational illnesses. Under this program, personnel identify potential hazards within the work environment. After hazards have been identified, determine the adequacy of current directives and procedures, provide appropriate training to affected personnel, and provide a method to track and control the training and hazard correction/abatement processes. See [Table 7.1.](#) for applicable AFOSH standards and [Table 7.2.](#) for other applicable directives and TOs. Document safety plans, actions, hazards, and personnel training with the following forms (use computerized forms when available):

- AF Form 3, **Hazard Abatement Plan**, AFI 91-301, *Air Force Occupational Safety, Fire Prevention and Health Program*.
- AF Form 55, **Employee Safety and Health Record**, AFI 91-301.
- AF Form 457, **USAF Hazard Report**, AFI 91-202, The US Air Force Mishap Prevention Program.
- AF Form 1118, **Notice of Hazard**, AFI 91-301.

Table 7.1. AFOSH Standards.

Reference	Publication Title
AFOSH Standard 91-5	Welding, Cutting and Brazing
AFOSH Standard 127-9	Manually Propelled and Self-Propelled Mobile Work Platforms Scaffolds
AFOSH Standard 127-12	Machinery
AFOSH Standard 127-17	Interior Spray Finishing
AFOSH Standard 127-22	Walking Surfaces, Guarding Floor and Wall Openings and Fixed Industrial Stairs, and Portable Ladders
AFOSH Standard 127-31	Personal Protective Equipment
AFOSH Standard 127-32	Emergency Shower and Eyewash Units
AFOSH Standard 91-38	Hydrocarbon Fuels - General
AFOSH Standard 91-38	Fuel Servicing Operations
AFOSH Standard 127-43	Flammable & Combustible Liquids
AFOSH Standard 127-44	Safety Color Coding, Labeling, and Marking for Piping
AFOSH Standard 127-45	Hazardous Energy Control and Mishap Prevention Signs and Mishap Prevention Signs and Tags
AFOSH Standard 127-46	Materials Handling and Storage Equipment
AFOSH Standard 127-47	Vehicle-Mounted Elevating & Rotating Work Platforms
AFOSH Standard 127-50	Ground Communications-Electronic (C-E) Systems
AFOSH Standard 127-51	Communications Cable and Antenna Systems
AFOSH Standard 127-56	Fire Protection and Prevention
AFOSH Standard 127-64	Data Processing Facilities
AFOSH Standard 91-66	General Industrial Operations
AFOSH Standard 127-67	Liquid Nitrogen and Oxygen Safety
AFOSH Standard 127-68	Chemical Safety
AFOSH Standard 127-90	Precision Measurement Equipment Laboratory
AFOSH Standard 127-100	Aircraft Flight Line - Ground Operations and Activities
AFOSH Standard 127-110	Nondestructive Inspection and Oil Analysis Program
AFOSH Standard 48-1	Respiratory Protection Program
AFOSH Standard 161-2	Industrial Ventilation
AFOSH Standard 48-8	Controlling Exposures to Hazardous Materials
AFOSH Standard 161-9	Exposure to Radio Frequency Radiation
AFOSH Standard 161-13	Occupational Health Exposure to Hydrazine
AFOSH Standard 161-17	Standardized Occupational Health Program
AFOSH Standard 161-20	Hearing Conservation
AFOSH Standard 161-21	Hazard Communication

Table 7.2. Air Force Regulations, Instructions, and Technical Orders.

Reference	Publication Title
AFI 11-218	Aircraft Operation and Movement on the Ground (formerly AFR 60-11)
AFI 21-105	Qualification of Welders (formerly AFR 66-25)
AFI 21-112	Aircraft Egress and Escape Systems (formerly AFR 66-51)
AFMAN 24-306	Manual for Wheeled Vehicle Driver (formerly 77-2)
AFI 91-201	Explosive Safety Standards (formerly AFR 127-100)
AFI 91-202	The US Air Force Mishap Prevention Program (formerly AFR 127-2)
AFI 91-204	Investigating and Reporting Mishaps (formerly AFR 127-4)
AFI 91-211	US Air Force Guide to Mishap Investigation (formerly AFR 127-1)
AFI 91-301	Air Force Occupational Safety, Fire Prevention and Health Program (formerly AFR 127-12)
AFR 161-35	Hazardous Noise Exposure
TO 00-110A Series	Inspection Maintenance Instruction, Storage, and Disposition of Aircraft
TO 00-20B-5	USAF Motor Vehicle and Equipment
TO 00-25-172	Ground Servicing of Aircraft and Static Grounding and Bonding
TO 00-25-223	Integrated Pressure Systems and Components (Portable and Installed)
TO 00-105E-9	Aircraft Emergency Rescue Information (Fire Protection)
TO 1-1-3	Inspection and Repair of Aircraft Integral Tanks and Fuel Cells
TO 1-1A-15	General Maintenance Instructions for Support Equipment
TO 1-1-691	Aircraft Weapons Systems Cleaning and Corrosion Control
TO 11A-1-33	Handling and Maintenance of Explosive Loaded Aircraft
TO 32-1-2	Use of Hand Tools (International Business Mechanical)
TO 32-1-101	Use and Care of Hand Tools and Measuring Tools
TO 33B1-1	Nondestructive Inspection Methods
TO 34Y1-1-171	Installation, Operation, Maintenance, and Inspection of Air Compressors
TO 35-1-3	Corrosion Prevention, Painting, and Marking USAF Equipment
TO 36-1-58	General Requirements for Repair, Maintenance and Testing of Lifting Devices
TO 38-1-23	Inspection and Installation of Spark Arresters and Exhaust Purifiers on Non-Aircraft
TO 4T-1-3	Tires and Tubes
TO 42A-1-1	Safety, Fire Precaution, and Health Promotion Aspects of Painting, Doping, and Paint Removal
TO 42B-5-1-2	Gas Cylinder (Storage Type) Use, Handling, and Maintenance

7.3. Safety Inspections. Accomplish hazard assessment and identification through the application of occupational safety, fire prevention, and health inspections, evaluations, and surveys. Perform self-inspections to assess the safety environment of the unit. Most AFOSH standards contain sample checklists for unit self-inspections. Also, use locally developed checklists tailored to specific unit requirements. Wing or base-level inspectors conduct unit inspections, evaluations, and surveys according to AFI 91-301. Use Occupational Safety and Health Act (OSHA) inspections for workplaces with civilian personnel. See AFI 91-301. OSHA inspections of Air Force contractor operations within the 50 states and US territories are authorized. These operations are subject to the enforcement authority of federal and state safety and health officials.

7.4. General Safety Guidance.

7.4.1. Use the general workcenter safety guidance in AFOSH STD 91-66, *General Industrial Operations*, and AFOSH STD 91-100, *Aircraft Flightline Ground Operations and Activities*. Follow AFOSH STD 91-66 for safe practices in operation and maintenance of base facilities, such as, buildings and grounds, general housekeeping, ladders, office safety practices, emergency eyewash and showers, and finger-ring policies. It also addresses safety precautions for electrical facilities and electronic equipment, such as, electrical emergency equipment, protective equipment, first aid training, clothing and jewelry.

7.4.2. Use AFOSH STD 91-100 for guidance pertaining to fire prevention, cardio-pulmonary resuscitation (CPR), wearing apparel, reflective materials, finger rings and jewelry, maintenance stands, lifting devices, and powered aerospace ground equipment (AGE). It also contains guidance for aircraft hangar operations, tool safety, material handling, fall protection, housekeeping, and operation and maintenance of compressed air systems.

7.5. Flightline Safety. Adhere to aircraft flightline safety guidance in AFOSH STD 91-100; TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*; and equipment TOs. AFOSH STD 91-100 contains safety guidance for towing and taxiing aircraft, aircraft jacking operations, aircraft cleaning and decontamination, aircraft tire mounting and servicing operations, and flightline vehicle operations. TO 00-25-172 contains safety guidance for aircraft servicing operations (all gaseous and liquid servicing), aircraft grounding and bonding, concurrent servicing operations, and combat or contingency operations.

7.6. Workcenter Safety Guidance. Follow aircraft repair shop safety guidance found in AFOSH STDs 91-66 and 91-100 and equipment TOs. AFOSH STD 91-66 contains safety guidance for particular repair shops, such as welding, parachute, paint, fiberglass repair, fabrication shops, etc. AFOSH STD 91-100 contains guidance for general shop principles, machine safeguarding and shop layout, housekeeping, aircraft painting and paint removal, battery equipment and charging operations.

7.7. Munitions Safety Guidance. Use munitions safety requirements found in AFI 91-201, *Explosive Safety Standards*; 11A-, 11P-, and 13A-series TOs (explosive and egress handling safety); AFI 21-112, *Aircraft Egress and Escape Systems*; and specific equipment Tos. AFI 91-201 contains safety topics, such as, explosive safety program elements, handling of aircraft, remotely piloted vehicles and drones containing explosives, fire protection, storage and compatibility standards, transportation, etc. The 11A-, 11P-, and 13A-series TOs deal with the specifics of handling and maintaining explosive items or components.

AFI 21-112 pertains to the handling of egress and escape systems and personnel training, certification, and decertification.

7.8. Flightline Driving. Motor vehicles operating on the flightline present a clear and possible danger to aircraft, equipment, and ground personnel. Guard against carelessness, haste, and disregard of existing safety standards. These factors are primary sources of collisions and personnel injury. Follow the general safety requirements for flightline vehicle operations found in AFOSH STD 91-100 and AFJMAN 24-306, *Manual for the Wheeled Vehicle Driver*. Familiarize all personnel authorized to operate vehicles on the flightline with the aircraft marshaling signals found in AFI 11-218, *Aircraft Operation and Movement on the Ground*.

7.9. AFOSH Guidance. Use AFOSH standards where federal standards either do not exist, do not adequately cover a function, for more stringent criteria, or when consolidation of information is beneficial for use in the workplace. Use Air Force functional directives and technical data instead of AFOSH standards if they contain adequate guidance. See [Table 7.1](#) for AFOSH standards applicable to aircraft maintenance activities.

7.10. Lockout and Tagout Concept. Use procedures to isolate machinery or equipment from all potentially hazardous energy. Machinery or equipment is locked out or tagged out before qualified personnel perform any servicing or maintenance when the unexpected energizing, startup, or release of stored energy could cause injury. Instruct all personnel in the safety significance of lockout or tagout procedures. Find complete guidance for instituting an effective program in AFOSH STD 91-45, *Hazardous Energy Control and Mishap Prevention Signs and Tags*.

7.10.1. Warning Tags. For on-equipment aircraft maintenance, use the AF Form 1492, **Warning Tag**, to "flag," a condition that could cause damage or injury if ignored. The tag is designed to preclude the inadvertent activation of a system which should not be activated.

7.10.1.1. Use the perforated bottom portion of the tag to provide a "cross-check" with the aircraft forms.

7.10.1.2. Insert this portion of the tag through the aircraft forms binder ring, aligned with its corresponding entry. Each warning tag must match an existing AFTO Form 781A entry.

7.10.1.3. Logs are not required for tracking warning tag use.

7.10.1.4. Authority for removing the tag and signing off the condition requires no special certification.

7.10.1.5. Units should establish publications for amplification of these minimum requirements.

7.10.2. Do not use the AF Form 979, **Danger Tag**, for on-equipment aircraft maintenance.

7.11. Safety Equipment. Protect workers from hazards by first eliminating exposure to the hazard. If this is not possible, supervisors provide appropriate safety equipment and training in its use to their personnel. The following directives provide guidance on safety equipment:

AFOSH STD 91-31, *Personnel Protective Equipment*.

AFOSH STD 91-32, *Emergency Shower and Eyewash Units*.

AFOSH STD 91-56, *Fire Protection and Prevention for information Fire Extinguishers*.

AFOSH STD 91-66 includes a list of high voltage emergency equipment.

AFOSH STD 91-100 includes guidance for the use of reflective materials.

AFOSH STD 48-1, *Respiratory Protection*.

7.12. Foreign Object Damage (FOD):

7.12.1. FOD Prevention. FOD prevention is the responsibility of all aircraft maintenance personnel. Units establish and implement procedures to prevent FOD. Supervisors brief all maintenance, operations, and base support personnel who work in, around, or drive through operational areas. Address common causes of FOD; local shop, flightline, and hangar work policies; hardware and tool control policies; and individual responsibilities to prevent FOD. Eliminate potential sources of FOD including poor housekeeping and poor work habits. The following practices will help prevent FOD:

7.12.1.1. Perform operations and maintenance tasks according to technical data.

7.12.1.2. Practice good housekeeping at all times in all areas.

7.12.1.3. Account for all tools, equipment, and hardware at the end of each task.

7.12.1.4. Use X-ray, borescope, and other state-of-the-art equipment to locate a foreign object in an inaccessible area.

7.12.1.5. Use vacuum or magnetic sweepers or sweep by hand, including personnel sweeps or FOD walks, to remove foreign objects from ramps, runways, and access roads.

7.12.1.6. Avoid wearing loose clothing or other articles that could be drawn into an engine intake or otherwise prevent the normal operation of equipment or systems. Examples of such articles would include: hats, hair fasteners, wigs, hairpieces, earrings, badges with metal clips or metal grade insignia. Wear coveralls without pockets or buttons when physical entry is needed to inspect intake or exhaust areas of engines. Chemical suits may be used during chemical warfare exercises when inspecting intake or exhaust areas of engines.

7.12.2. FOD Investigation and Reporting. Units investigate each case of FOD to determine its cause. Report FOD mishaps according to AFI 91-204, *Investigating and Reporting US Air Force Mishaps*. If the unit determines the FOD is attributable to personnel error, include it in the FOD rate. Include engine FOD except when:

7.12.2.1. Caused by natural environment or wildlife. This includes hail, ice, animals, insects, and birds. Report this type of damage according to AFI 91-204. Do not include it in FOD rates.

7.12.2.2. From internal materiel failure of the damaged item, as long as damage is confined to that item.

7.12.2.3. Caused by materiel failure of an aircraft component if the component failure is reported on an MDR using the combined class C/Cat II MDR reporting procedures of AFI 91-204 and TO 00-35D-54.

7.12.2.4. Found during depot overhaul for maximum operating time.

7.12.3. Unit Responsibilities. Establish these procedures to minimize the impact of FOD:

7.12.3.1. Analyze AFI 91-204 FOD data to identify areas that need additional management emphasis.

7.12.3.2. Provide FOD data and information to MAJCOM Headquarters for dissemination to other units.

7.12.3.3. Comply with the requirements of MIL-STD-980, *Foreign Object Damage (FOD) Prevention in Aerospace Products*.

Chapter 8

WEAPONS STANDARDIZATION, WEAPONS, AND ARMAMENT SYSTEMS FUNCTIONS

8.1. Introduction. This chapter covers wing weapons activities. It spans a wide spectrum of weapons activities including weapons standardization, training, evaluation, weapons, and armament systems functions duties and responsibilities. It provides direction on weapons organization and responsibilities for weapons expeditors, armament systems, weapons loading and maintenance sections, and the armament support section.

8.2. Weapons Standardization (WS). Align WS under the operations group commander. WS comprises the wing weapons manager (WWM), an NCOIC, the loading standardization crew (LSC), academic instructor, and lead crews. Assign one lead crew from each FS; however, additional lead crews may be necessary. Lead crews return to their respective flying squadron for deployments, generations, and exercises.

8.2.1. WWM. The operations group commander appoints a WWM, who is the senior 2W1XX and is the functional manager for AFSC 2W1X1. The WWM ensures weapons activities can perform required combat skills in support of O-Plan tasking. The WWM:

8.2.1.1. Works with squadron maintenance supervisions to balance grades and skill-levels between the weapons sections and armament systems flight.

8.2.1.2. Designates the LSC, lead crews, and academic instructor in writing and monitors their activities.

8.2.1.3. Develops and implements the applicable wing ICT and dual load crew programs.

8.2.1.4. Monitors overall load crew status and submits a message through the OG/CC to the appropriate headquarters when the number of certified load crews falls below the UCML established minimums.

8.2.1.5. Reviews tasking and coordinates changes and appendices with the weapons and tactics function and the munitions flight.

8.2.1.6. Serves as an advisor to the wing exercise evaluation team. Provides expertise in development of local exercises involving weapons functions to include loading.

8.2.1.7. In coordination with the explosive safety officer and airfield management, develops a wing regulation for launch and recovery of explosives loaded aircraft. Immediately prior to launch, safing procedures may be performed in the aircraft parking area at the discretion of the group commander.

8.2.1.8. Ensures standardization of load crew CTKs by aircraft MDS to the maximum extent possible to provide optimum interoperability of load crew personnel. Bomber unit CTKs must support loading/unloading both nuclear (those weapons required locally) and conventional internal and external stores. CTKs must also accommodate loading stores on all tasked alternate mission equipment (AME) configurations.

8.2.1.9. Ensures availability of sufficient serviceable load training munitions to support both load crew and ICT training programs.

8.2.1.10. Designates, in coordination with the OG/CC, the number of load crews, other than the LSC and lead crews, certified on conventional support/limited use munitions based on unit tasking.

8.2.1.11. Monitors the unit's weapons release reliability and gun fire-out rates to determine weapons system effectiveness.

8.2.1.12. Works with the SMOs, the munitions flight, weapons safety, and operations plans in developing nuclear weapons operations procedures (e.g. convoy, custody transfer as required, no-lone-zone, etc.), if applicable.

8.2.2. WS NCOIC. The NCOIC develops and oversees the weapons standardization program. He or she sets standards, develops local policies and procedures, and interprets all technical data and directives governing the weapons standardization program. The WS NCOIC:

8.2.2.1. Coordinates with the flying squadrons to schedule weapons load crews for training and evaluations.

8.2.2.2. Coordinates with the operations support squadron PS&D for training aircraft.

8.2.2.3. Manages training munitions, components, and accessories.

8.2.2.4. Establishes a supply point with the munitions operations unit (FK/FV) for conventional training munitions.

8.2.2.5. Annually forecasts for training munitions identifying total requirements, regardless of items on hand.

8.2.2.6. Orders training munitions and items to meet load crew training needs and ensures training munitions mirror correct body color and mechanical function of live munitions.

8.2.2.7. Assigns training munitions used for wing exercises and ICT training to the munitions flight. However, if sufficient training munitions are not available to support both load crew training and ICTs, assigns them to WS supply point.

8.2.2.8. Maintains a system to depict load crew status. As a minimum, the load crew status system reflects the formed crews by number and crew member position, by individual, the next MPRL due date for each munitions, quarterly evaluation due date, preload due date, ICT/DLO due date, competent familiarity loading (CFL) due date for each type of munitions, and training due date for each weapons task qualification.

8.2.2.9. On notification of a deployment or an increased state of alert, certifies load crews on support munitions, as required.

8.2.2.10. Maintains a copy of all loading technical data for assigned aircraft. Training and test units need only maintain checklists for munitions listed on their UCML and those undergoing test and evaluation.

8.2.2.11. Develops time standards for integrated loads.

8.2.2.12. Ensures qualification of all load crews to load/unload gun systems and preloaded chaff or flare magazines in defensive countermeasures systems on assigned aircraft.

8.2.2.13. Ensures load crews demonstrate proficiency on all capable aircraft racks and stations prior to certification. For conventional munitions capable of multiple carriage, this requires both

parent station and MER/TER/BRU loading. For nuclear weapons, demonstrate proficiency only at tasked aircraft stations.

8.2.3. Loading Standardization Crew (LSC). The LSC works for WS NCOIC and conducts the weapons standardization and evaluation program. The wing weapons manager/WS NCOIC evaluates and certifies the LSC according to criteria in this section. The LSC chief must be at least a 7 level technician in AFSC 2W1X1. The LSC trains, evaluates, and certifies the lead crews and load crews in safe and reliable munitions loading procedures. Multiple MDS Composite Wings will have an LSC for each MDS. The LSC:

8.2.3.1. Conducts and monitors training to ensure personnel maintain a high degree of proficiency in loading unit committed munitions.

8.2.3.2. Monitors certification and recurring training documents to ensure all load crew members complete required proficiency and academic training. Takes decertification action if recurring requirements are not met.

8.2.3.3. Documents load crew training.

8.2.3.4. Reviews and approves or disapproves AFTO Forms 22, **Technical Order System Publication Improvement Report and Reply**, that pertain to loading technical data.

8.2.3.5. Develops and coordinates weekly and monthly load crew training schedules and provides them to PS&D.

8.2.3.6. Monitors lead crews in the performance of their duties.

8.2.3.7. Performs quarterly evaluations on all certified load crews.

8.2.3.8. Provides non-load crew personnel initial and recurring weapons task qualification training, including practical training on the proper use, installation, and removal of weapons system safety devices; munitions safety requirements; location of weapons system explosive items used to jettison and release external stores; stray voltage checks; and cockpit armament system switches.

8.2.4. Lead Crews. Assign the lead crews to the WS. They assist the LSC in training, evaluating and certifying unit load crews. The lead crews:

8.2.4.1. Initiate AF Forms 2435, **Load Training and Certification Document**, on certified crewmembers.

8.2.4.2. Review certification and recurring training documents to ensure all load crewmembers complete required proficiency and academic training. Take de-certification action when recurring requirements are not met.

8.2.5. Academic Instructor. The academic instructor is assigned to WS and administers the weapons academic training program. The instructor conducts required initial and recurring weapons academic training for all unit load crew members, loading supervisors, ICT team members and other personnel who maintain specific weapons task qualifications. The academic instructor may assist in conducting practical training. In squadron-size units, the instructor may be a member of the LSC.

8.3. Academic Training.

8.3.1. Initial academic training. Require all load crew members, loading supervisors, and other personnel who maintain specific weapons task qualification to complete initial and recurring academic training. Complete initial academic training before starting practical training. Administer recurring academic training annually. It may also be part of training and recertification for failed loadings. Coordinate training requirements and course control documents with the maintenance training flight. Tailor course control documents to unit needs. Cover publications, safety, security, aircraft familiarization, munitions, AGE SE familiarization, test equipment, special tools, handling equipment, nuclear weapons fault isolation and troubleshooting procedures (in nuclear tasked unit), weapons storage and security system vaults (tasked units). Load crew academic training may fulfill the requirements for explosive safety and nuclear surety training, if the requirements of AFI 91-202 and AFI 91-101, *Air Force Nuclear Weapons Surety Program*, are included.

8.4. Practical Training. Practical training starts when academic training is complete. Conduct practical training in a facility dedicated to load crew training. Use a facility large enough to accommodate assigned aircraft, required training munitions, and associated SE. Bomber aircraft should have dedicated load training facilities; however, where not practical, provide inside facilities for periods of extreme inclement weather. The practical training facility should also have adequate office space and an academic classroom with appropriate heating and cooling. The LSC or lead crewmembers administers practical training to each load crew member on required munitions and aircraft. They ensure practical training duplicates operational conditions to the maximum extent possible and stress requirements, such as ICT/DLO, two-person concept, no-lone zones, safety wiring and sealing, controlled access, and weapon custody receipt and transfer procedures. Other load crew practical training considerations include:

- Familiarity with munitions serviceability criteria. Do not allow blanket rejection of training munitions during load training solely because they are inert.
- Familiarity with the operation of all available AGE and SE used during loading operations, even if not used on a routine basis. Conduct training on items such as the MHU-194/E manually-operated lift truck during initial training and certification and annually thereafter.
- In nuclear committed units which may deploy to locations equipped with weapons storage and security system vaults in aircraft shelters, train load crews to and load or unload weapons from or into the vault.
- Unit task assignment lists (TAL). WS develops TALs used during training for all loading operations except those with published job oriented procedures. MPRLs, quarterly evaluations, and quarterly ICTs are not training operations.

8.4.1. Integrated Combat Turnaround (ICT) Program. In conjunction with flying squadrons, WS coordinates and establishes the unit ICT program. A highly qualified AFSC 2AXXX assists in developing and implementing a program which:

8.4.1.1. Is consistent with unit tasking.

8.4.1.2. Provides initial ICT academic and practical training for load crews, aircraft maintenance personnel, and ATSS.

8.4.1.3. For deploying units, ensures personnel are familiar with their beddown locations and the operational environment, for example, hardened aircraft shelter, flow through, open ramp, etc.

8.4.1.4. Uses all PMs.

8.4.1.5. Documents all personnel ICT qualifications on AF Form 2435 or in an automated system.

8.4.1.6. Documents training for non-load crew personnel in the automated management system.

8.4.1.7. Documents initial and recurring evaluations of ICT qualified personnel (except CTDs). The senior WS evaluator has final authority on the overall ICT rating and initiates documentation. Evaluate load crews quarterly and non-load crew personnel semiannually.

8.4.1.8. Disqualifies personnel who fail to complete required ICT evaluations. ICT disqualification does not necessarily result in munitions de certification.

8.4.1.9. Incorporates ICT exercises as necessary in fighter units. Units perform sufficient training and proficiency ICTs to maintain MAJCOM tasked readiness.

8.5. Certifying, Decertifying, and Evaluating Load Crews:

8.5.1. Certifying Crews. Certify the LSC and lead crews on all SMs to provide a training base for upgrading other unit load crews. You may certify dual-position load crewmembers; however, do not certify load crewmembers on more than 10 munitions and munitions family groups (MFG) combined. Personnel certified on two separate MDS aircraft alternate quarterly and ICT requirements between the two tasked aircraft. Accomplish proficiency requirements on both aircraft.

8.5.1.1. The WWM determines the number of additional load crews trained and certified on limited use munitions.

8.5.1.2. A minimum of two certifying officials evaluate three- and four-member load crews.

8.5.1.3. Current certification of a load crewmember is valid worldwide. A permanent change of station (PCS) does not require recertification by the gaining unit if the individual is certified for the same type of munitions, aircraft, and position. Units, therefore, provide gaining units with the AF Forms 2435.

8.5.1.4. All certified load crews perform proficiency loads monitored by a lead crew or the LSC. The LSC monitors lead crew proficiency loads. The LSC does not require monitored proficiency loads. Postload inspections of unmonitored weapons loading do not meet these proficiency requirements.

8.5.2. Decertifying Crews:

8.5.2.1. Decertify and disqualify individuals if they fail an evaluation, fail to complete a required evaluation (QE, MPRL, ICT, etc.), or fail to accomplish required recurring academic training. Administratively decertify and disqualify individuals not completing academic training on all unit-committed munitions.

8.5.2.2. If an individual is TDY, on emergency leave, incapacitated, or involved in an unannounced local or higher headquarters exercise, that person (and load crew, if applicable) need not be decertified/disqualified if the current month's MPRL and evaluation requirements are completed. Complete all past due evaluations within 30 days of member's return to duty.

8.5.3. Evaluating Crews. The LSC evaluates each load crew once a quarter on one of the unit PMs (all unit PMs are used on a rotating basis). Do not use ICTs to meet this requirement. Maintain load crew integrity for these evaluations. Decertify load crews on all munitions when they fail to accomplish quarterly evaluations, unless exempted as specified in the above paragraph. Lead crews do not

require quarterly evaluations. Apply the following criteria to initial certification, MPRLs, quarterly evaluations, and ICTs:

8.5.3.1. Exceeding the time standard results in a failed rating for the load crew chief. Failure to meet time standards on an ICT results in disqualification for the load crew chief only if caused by the load crew.

8.5.3.2. More than four errors per crew member results in a failed rating for the individual (this does not apply to ICTs).

8.5.3.3. A safety or reliability error results in a failed rating for the individual.

8.5.3.4. The lack of technical proficiency results in a failed rating for the individual.

8.5.3.5. Load time standards apply to all operational users of the munitions or aircraft listed and are the minimum proficiency requirements for weapons load crews. Fighter aircraft standards will be specifically defined by MDS and munitions or munitions family group. AFMC will establish their own MFG/munitions time standards. Bomber aircraft will use time standards established by ACC. Units may establish more restrictive standards.

8.5.3.6. Load crews for different aircraft may vary in size and consist of three or four persons. The sizes for various MDS are:

- Three-member crews--A/OA-10, F-15, F-16, F-117, and F-22.
- Four-member crews--B-1, B-2, and B-52.

8.6. Documentation. Use AF Forms 2435 for load crew certification, decertification, ICT/DLO qualification, quarterly evaluations, MPRLs and CFLs. Prepare separate forms for each person by crew position and MDS aircraft. Other documentation requirements:

8.6.1. Document quarterly evaluations on AF Form 2419, **Routing and Review of Quality Control Reports.**

8.6.2. The LSC keeps load crew records. Include only the following documents: AF Form 2435 for each crew member and AF Form 2419 recording the most current quarterly evaluation and ICT evaluation.

8.6.3. Send copies of load crew certification records with the load crews to TDY locations. If using automated products to depict load crew status, use these copies instead of the certification records with the following statement after the last entry on each product: "AF Forms 2435 has been reviewed, the member is certified and qualified on the items listed on this product." Follow this statement with the signature of a certifying official and the date.

8.6.4. Document academic and qualification training (except load crew ICT/DLO qualification) in CAMS.

8.7. Weapons Section. The weapons section normally consists of two functions; loading and maintenance. Do not form maintenance functions in squadrons supporting EF-111A or bomber aircraft.

8.7.1. Weapons Section Chief. In addition to the common responsibilities in [Chapter 3](#), the weapons section chief:

- 8.7.1.1. Designates weapons expeditors.

8.7.1.2. Ensures a checklist for each PM and SM is on hand for each assigned load crew.

8.7.1.3. Routes all AFTO s 22, **Technical Order System Publication Improvement Report and Reply**, for -16 and -33 TOs to the weapons section for review.

8.7.1.4. Ensures accomplishment of supervisory postloads and maintenance inspections.

8.7.1.5. Ensures approval for use of locally manufactured equipment (LME) if not included in tech data. The command headquarters is the approving authority for armament LME. All equipment designed for use with nuclear weapons test and handling equipment is certified according to AFI 91-103, *Air Force Nuclear Safety Certification Program*.

8.7.1.6. Ensures individual tool kits are set up for each load crew designated to support unit OPlan tasking. Determines the number of loading tool kits required for load crews which support only test, evaluation, or training operations.

8.7.1.7. Ensures control of coded lead seal dies for nuclear applications according to AFI 91-104, *Nuclear Surety Tamper Control and Detection Programs*.

8.7.1.8. Ensures accomplishment of aircraft -6 armament system inspections (except phase/HPO).

8.7.1.9. Tracks all assigned in-use AME by aircraft tail number and position installed.

8.7.1.10. Ensures updates of normally installed equipment (NIE) locations in the automated management system.

8.7.1.11. Sends load crew certification records and automated products with load crews to TDY locations.

8.7.1.12. Ensures personnel receive required prerequisite training prior to entering initial load crew training (e.g. cockpit familiarization, fire fighting, AGE, etc.)

8.7.1.13. Ensures completion of on-equipment functional checks on all AME and NIE installed as a result of transfer or acceptance inspection actions.

8.7.1.14. Ensures accomplishment of appropriate follow-up actions for all armament system malfunctions. Monitors actions taken by supporting agencies on dispensers, suspension equipment, training munitions, etc., involved with specific system malfunctions. Informs the squadron maintenance officer and wing weapons manager whenever the weapons release reliability and gun fire-out rates do not meet the command standard.

8.7.2. Loading Function:

8.7.2.1. The weapons load crew chief is responsible to the weapons section chief for armament systems maintenance and loading of assigned aircraft. Load crew chiefs are NCOs with AFSC 2W151 (senior airmen may per load crew chief duties when unit manning dictates, but are individually designated by the squadron maintenance officer in writing). The load crew chief:

8.7.2.1.1. Supervises the loading and unloading of only one aircraft at a time.

8.7.2.1.2. Ensures no maintenance is performed on an aircraft which interferes with normal loading or unloading operations.

8.7.2.1.3. Ensures required safety equipment is available, serviceable, and, if applicable, installed:

8.7.2.1.4. Ensures compliance with AFI 91-301 when responding to unscheduled maintenance actions on nuclear loaded aircraft.

8.7.2.2. All personnel assigned to the loading function:

8.7.2.2.1. Load and unload munitions or weapons in support of daily or contingency operations.

8.7.2.2.2. Install and remove armament related suspension equipment, launchers, adapters, etc., on assigned aircraft to support configuration requirements for daily or contingency operations.

8.7.2.2.3. Perform functional and stray voltage checks required for loading operations.

8.7.2.2.4. Provide assistance to the maintenance function, when required.

8.7.2.2.5. Are certified before loading war reserve nuclear weapons.

8.7.2.2.6. Are certified before performing loadings of conventional munitions, unless loading under the direct supervision of a minimum of two certifying officials.

8.7.2.2.7. Are not certified on more than two types of aircraft, except during munitions and aircraft test programs.

8.7.3. Maintenance Function. Units may form maintenance functions on an optional basis. When formed, the maintenance function personnel perform:

8.7.3.1. Installation and removal of armament AME and NIE to include acceptance and transfer inspections.

8.7.3.2. Aircraft troubleshooting and repair actions.

8.7.3.3. Aircraft armament systems functional checks and associated -6 inspection requirements on in-use AME and NIE.

8.7.3.4. Boresight of aircraft guns and gun pods.

8.7.3.5. Armament systems preflights, through-flights and BPO inspections.

8.7.3.6. On-equipment TCTOs.

8.7.3.7. Weapons related qualification tasks for the unit. Unless there is lack of manpower, do not certify maintenance section personnel as load crew members.

8.7.4. Weapons Expediter. The weapons expediter is responsible to the weapons section chief for all armament systems maintenance and munitions loading operations. The expediter responds to maintenance priorities established by the flightline expediter and production superintendent and operates from a vehicle equipped with a portable or mobile radio. He or she:

8.7.4.1. Supervises and monitors on-equipment armament systems maintenance and munitions loading operations.

8.7.4.2. Tracks aircraft and suspension equipment and munitions configurations.

8.7.4.3. Informs the flightline expediter of all start and stop times, status changes, delays and extensions.

8.7.4.4. Performs as many supervisory post loads and maintenance inspections as possible.

8.7.4.5. Initiates cannibalization documentation when installed equipment (with inspection requirements aligned to aircraft phase and flying hours, i.e. pylons, bomb racks, launchers, etc.) is removed and installed on another aircraft. Use caution when installing items on aircraft with less phase time accrued than the item itself to avoid over fly of equipment inspection requirements.

8.7.4.6. Coordinates with the maintenance coordination function and munitions control for delivery and pickup of munitions items.

8.7.4.7. Ensures accomplishment of all scheduled and unscheduled maintenance and inspections with the flightline expeditor.

8.7.4.8. Monitors the safety of flightline munitions operations.

8.7.4.9. Tracks munitions expenditures on AF Form 2434, **Munitions Configuration and Expenditure Document**, for all aircraft configured and loaded to release or fire munitions. Record location or position of all munitions related AME or munitions SE by serial number. An AF Form 2434 is not required for aircraft loaded for alert or exercises not involving flight. At the end of the flying day, send copies of the AF Form 2434 to the function maintaining the applicable item and expenditure records.

8.7.5. Weapons Task Qualification. A weapons task qualification is a munitions related task not requiring certification. Personnel receive initial and annual recurring training for these operations. Recurring training may be conducted during normal flightline operations. WS provides this training and records it in the automated system. Two or more personnel in AFSC 2W1X1 (unless otherwise specified) may perform the following:

8.7.5.1. Install and remove impulse cartridges, if the task is not part of a loading operation (may be non-2W1X1 personnel).

8.7.5.2. Install and remove chaff and flare magazines (may be non-2W1X1 personnel).

8.7.5.3. Load and unload BDU-33, BDU-48, and MK-106 practice bombs.

8.7.5.4. Perform portions of the conventional loading checklist which pertain to delayed flight or alert, immediately prior to launch and safing procedures (may be non-2W1X1 personnel).

8.7.5.5. Load and unload captive AIM-9 missiles, acceleration monitor assemblies (requires three people) (may be non-2W1X1 personnel).

8.7.5.6. Load and unload ammunition in internal and external gun systems (GAU-8 requires three people).

8.7.5.7. Perform munitions and missile isolation procedures to facilitate other maintenance (may be non-2W1X1 personnel).

8.7.5.8. Install and remove practice bomb adapter rack and cluster rack adapter.

8.7.5.9. Load and unload helicopter pyrotechnics.

8.7.6. Dual Loading Operations:

8.7.6.1. May be used when both internal and external (B-52) or dual bay (B-1, B-2) loading is required.

8.7.6.2. Both load crew chiefs must:

8.7.6.2.1. Check the aircraft AFTO Form 781 for aircraft and armament system status.

8.7.6.2.2. Be present during the pre-task briefing.

8.7.6.2.3. Verify that all previously loaded munitions are in pre-maintenance status, cockpit switches are properly positioned during aircraft preparation.

8.7.6.2.4. Check off each step in separate checklists as they are accomplished.

8.7.6.3. Each load crew conducts independent loading operations from separate trailers positioned on opposite sides of the aircraft.

8.7.6.4. Perform no postload power-on checks until all munitions are loaded and bay connections accomplished.

8.7.6.5. Both load crew chiefs must ensure the conventional system switches and controls are properly positioned and verify the conventional munitions status and inventory during postloading inspection.

8.8. Transient Aircraft. Any certified and qualified weapons load crew may perform arming, dearming, and munitions unloading operations on transient aircraft. If appropriate technical data is available, the operations group commander may direct the LSC or a lead crew to dearm and unload an aircraft on which they are not certified/qualified. In such cases, the air crew should be available for consultation on aircraft peculiarities. If these conditions cannot be met, request help from higher headquarters. Develop local procedures to control impulse cartridges removed from transient aircraft.

8.9. Armament Systems Flight. The armament systems flight performs on- and off-equipment maintenance for assigned aircraft armament systems, guns, pylons, racks, launchers, and adapters. The flight normally consists of three sections: maintenance, AME, and support. In addition to common responsibilities in [Chapter 3](#), the flight chief:

8.9.1. Assists the wing weapons manager in recommending distribution of wing 2W1X1 personnel to satisfy on-and off-equipment weapons release and gun system needs.

8.9.2. Sets up and monitors gun room security and explosive licenses if required.

8.9.3. Performs AME and special purpose recoverables authorized to maintenance (SPRAM) accountability and control requirements.

8.9.4. Supports WRM rack, adapter, pylon, launcher, and gun maintenance requirements.

8.9.5. Identifies, by NSN, all aircraft armament systems components requiring acceptance inspections to base supply.

8.9.6. **Armament Maintenance Section.** The maintenance section maintains weapons release and gun system components and associated equipment. When supporting more than one FS, MAJCOMs have the option to divide the maintenance section into combat armament support teams (CAST). Align each CAST with an FS. CASTs provide support to their respective FS. CAST chiefs are 7-skill level NCOs if possible and are responsible for all maintenance actions pered by their respective team. Assign an NCOIC for overall section management. The maintenance section:

- 8.9.6.1. Schedules and performs all inspections, TCTOs, time changes, maintenance, and repair actions for aircraft armament systems components and AME, including AME items preloaded with munitions for contingencies.
 - 8.9.6.2. Advises the flight chief of any factors limiting the maintenance capability.
 - 8.9.6.3. Maintains WRM assets.
 - 8.9.6.4. Files equipment historical records (AFTO Forms 95) for AME, aircraft guns, and weapons systems NIE, if decentralized.
 - 8.9.6.5. Coordinates with PS&D for equipment requiring in-shop inspections. (When possible, schedule calendar NIE inspections in conjunction with the nearest aircraft hourly inspection.)
 - 8.9.6.6. Performs off-equipment acceptance/transfer inspections on aircraft, to include NIE and AME. These inspections include a parts integrity, a complete electrical and mechanical check to include associated cables, and updating the historical records for each item.
 - 8.9.6.7. Performs the armament system portion of aircraft inspections.
 - 8.9.6.8. Maintains and inspects ammunition loading assemblies and systems and replenishers. The munitions flight or AGE flight maintains the chassis portion.
 - 8.9.6.9. Maintains task qualification for those personnel supporting combat coded flying squadrons. Coordinates with flying squadron weapons section chiefs and the wing weapons manager to establish standard minimum qualification requirements. Qualification may include installation and removal of all assigned aircraft NIE, aircraft configuration and deconfiguration, weapons release and gun system functional checks, and troubleshooting.
 - 8.9.6.10. During contingencies and exercises, CASTs are assigned to the respective flying squadron's weapons section chief.
 - 8.9.6.11. In coordination with PS&D, requisitions parts to satisfy time change requirements for aircraft armament or gun system components not identified in the applicable aircraft -6 TO.
- 8.9.7. Alternate Mission Equipment (AME) Section. The AME section accounts for, stores, controls, and delivers AME in support of the flying squadrons. Personnel assigned to this section may be aligned with CASTs for participation in competitions and recognition programs. The AME section:
- 8.9.7.1. Develops a maintenance publication (in coordination with flying squadron weapons section chiefs and WWM) governing accountability and control of AME. **NOTE:** This section is not formed in fighter units, which have no AME or in-bomber units.
 - 8.9.7.2. Maintains F-2 types trailers for mobility. Trailers placed in use receive pre-use and post-use serviceability inspections. Develop periodic inspection requirements (maximum interval of 18 months) for trailers in storage.
 - 8.9.7.3. Unpacks or packs assigned AME in storage and delivers it to the maintenance section for inspection.
 - 8.9.7.4. Develops and implements a program for documenting issues and receipts of in use AME.
 - 8.9.7.5. Lists assets as SPRAM if required.
- 8.9.8. Armament Support Section. This section stores and maintains required tools and equipment and manages supply and bench stock functions for the flight. Personnel assigned to this section may

be aligned with CASTs for participation in competitions and recognition programs. The armament support section:

8.9.8.1. Performs user calibration and maintenance on flight TMDE.

8.9.8.2. Coordinates with the precision measurement equipment laboratory (PMEL) to meet calibration requirements.

8.9.8.3. Maintains the master ID listing.

8.9.8.4. Manages consumables.

8.9.8.5. Ensures locally manufactured equipment (LME) not included in tech data is approved for use.

8.10. Forms Prescribed. This instruction prescribes the following forms:

AF 537, **PME Shipping.**

AF 596, **Quick Engine Change Kit Inventory.**

AF 726, **Transient Aircraft Service Record.**

AF 861, **Base/Transient Job Control Number Register.**

AF 1492, **Warning Tag.**

AF 2400, **Functional Check Flight Log.**

AF 2401, **Equipment Utilization and Maintenance Schedule.**

AF 2402, **Weekly Equipment Utilization and Maintenance Schedule.**

AF 2403, **Weekly Aircraft Utilization/Maintenance Schedule.**

AF 2406, **Maintenance Pre-Plan.**

AF 2407, **Weekly/Daily Flying Schedule Coordination.**

AF 2408, **Generation Maintenance Plan.**

AF 2409, **Generation Sequence Action Schedule.**

AF 2410, **Inspection/TCTO Planning Checksheet.**

AF 2413, **Supply Control Log.**

AF 2414, **Verification Worksheet.**

AF 2422, **Maintenance Analysis Referral.**

AF 2426, **Training Request and Completion Notification.**

AF 2430, **Specialist Dispatch Control Log.**

AF 2431, **Aerospace Ground Equipment Status Log.**

AF 2434, **Munitions Configuration and Expenditure Document.**

AF 2435, **Load Training and Certification Document.**

AF 2436, **Weekly/Daily Aircraft Utilization Schedule.**

AF 2446, **Schedule of Technician Availability.**

AF 2520, **Repair Cycle Control Log.**

AF 2521, **Turnaround Transaction Log.**

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Attachment 1

GLOSSARY OF TERMS

Terms

Aircraft Crew Chief—Person who is ultimately responsible for the appearance and performance of a specific aircraft tail number.

Aircraft Impoundment—Isolation of an aircraft due to an unknown malfunction or condition making it unsafe for flight.

Aircraft Maintenance Qualification Program (AMQP)—Conducts training in an environment that is not in competition with sortie production. Ensures personnel arrive at their workcenter with the necessary skills to be immediately productive.

Aircrew Training Device (ATD)—Weapons systems simulator or designated training aircraft.

Alternate Mission Equipment (AME)—Equipment identified to a higher end-item, not listed in the table of allowance. Normally, -21 equipment.

Area Turnaround Supervisor (ATS)—7-level maintenance technician who is responsible for supervising aircraft ICT operations.

Awaiting Maintenance (AWM)—Designation for a deferred discrepancy on an aircraft awaiting maintenance.

Awaiting Parts (AWP)—Designation for a deferred discrepancy on an aircraft awaiting parts.

Bench Stocks—Stores of expendability, recoverability, reparability coded (ERRC) XB3 items kept on-hand in a workcenter to enhance maintenance productivity.

Cannibalization—Authorized removals of a specific assembly, subassembly, or part from one weapons system, system, support system, or equipment end-item for installation on another end-item to meet priority mission requirements with an obligation to replace the removed item.

Class I and Class II Aircraft—Classification categories used when calculating aircraft's weight and balance.

Code I, Code II, Code III—Landing status codes used by aircrew to inform maintenance of their inbound aircraft's condition. A Code I aircraft has no additional discrepancies other than those it had when it last departed; a code II aircraft has minor discrepancies, but is capable of further mission assignments.; and a code III aircraft has major discrepancies in mission-essential equipment that may require extensive repair or replacement prior to further mission tasking.

Combat Turn Director—Maintenance officer or senior NCO who is responsible for aircraft turnaround operations.

Commodity Time Compliance Technical Order—TCTO concerning a designated item, subsystem, or system that is not identified as a weapon or military system.

Competent Familiarity Loading (CFL)—Loading of a support munitions that requires only that the person have a satisfactory fundamental knowledge of the loading operation.

Composite Tool Kit (CTK)—Tools and equipment stored in a controlled area in order to maintain

positive control and ease of inventory.

Course Control Documents (CCD)—Set of documents that dictate how a course is taught. These documents include a course training standard, course chart, and a plan of instruction.

Debriefing—Aggressive aircrew or maintenance program designed to ensure malfunctions identified by air crews are properly reported and documented.

Delayed or Deferred Discrepancies—Malfunctions or discrepancies not creating NMC or PMC status that are not immediately corrected.

Depot Level Maintenance—Maintenance consisting of those on- and off-equipment tasks performed using the highly specialized skills, sophisticated shop equipment, or special facilities of a supporting command; commercial activity; or inter service agency at a technology repair center, centralized repair facility, or, in some cases, at an operating location. Maintenance performed at a depot may also include organizational or intermediate level maintenance as negotiated between operating and supporting commands.

Dual Loading Operations (DLO)—Conventional munitions loading operation on bomber aircraft accomplished simultaneously by two load crews.

Equipment Custodian—Individual responsible for all in-use equipment at the organizational level whose duties include requisitioning, receiving, and controlling of all equipment assets.

Equipment Items—Item authorized in the allowance standard within an organization.

Flight Chief—NCO responsible to the maintenance officer or superintendent for management, supervision, and training of assigned personnel.

FK or FV—Supply point within a munitions' operations unit for conventional munitions.

Immediately Prior to Launch (IPL)—Specific tasks accomplished immediately prior to launching an aircraft.

In-Process Inspection (IPI)—Inspection performed during the assembly or reassembly of systems, subsystems, or components with applicable technical orders.

Integrated Combat Turnaround (ICT)—Authorized exceptional servicing operation for aircraft during which the simultaneous fueling, munitions loading and unloading, general servicing, and other specific maintenance actions are performed.

Intermediate-Level Maintenance—Maintenance consisting of those off-equipment tasks normally performed using the resources of the operating command at an operating location or at a centralized intermediate repair facility.

Lead Crews—A load crew certified by the load standardization crew (LSC), which is assigned to WS to assist in conducting the weapons standardization program.

Locked Out or Tag Out—Energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which or through which a lock can be affixed. Tag out devices, shall be substantial enough to prevent inadvertent or accidental removal.

Maintenance Training —Any proficiency, qualification, or certification tasking required by a technician to perform duties in their primary AFSC.

Mission Design Series (MDS)—Alpha and numeric characters denoting primary mission and model of a

military weapons system.

Minimum Proficiency Requirement Loading (MPRL)—Recurring loading of munitions for which a person is certified.

Munitions Decertification —Removal of the certification status of a person that precludes them from loading a specific type munitions or MFG.

Munitions Family Group (MFG) —Munitions that are so similar that training and certification on one item in the group satisfies the requirements for the others.

Normally Installed Equipment (NIE)—Bomb racks, launchers, and pylons normally installed on an aircraft.

No-Lone Zone—Area where the two-man concept must be enforced because it contains nuclear weapons, nuclear weapons systems, or certified critical components.

Non-Release—System malfunction in which a weapon does not release from the delivery system.

Off-Equipment Maintenance—Maintenance tasks that are not or cannot be effectively accomplished on or at the weapon system or end-item of equipment, but require the removal of the component to a shop or facility for repair.

On-Equipment Maintenance—Maintenance tasks that are or can be effectively performed on or at the weapon system or end-item of equipment.

Operating Stock—The bits and pieces needed to support a maintenance workcenter which don't meet the criteria of bench stock. It includes reusable items such as dust covers, hydraulic line covers, caps, items leftover from work orders, TCTOs, and items deleted from bench stock.

Operational Readiness Inspection (ORI)—Inspection that measures a unit's war-fighting readiness.

Organizational Level Maintenance—Maintenance consisting of those on-equipment tasks normally performed using the resources of an operating command at an operating location.

Permissive Action Link (PAL)—Device included in or attached to a nuclear weapons system to preclude arming and launching until insertion of a prescribed discrete code or combination.

Personnel Protective Equipment (PPE)—Equipment required to do a job or task in a safe manner.

Primary Munitions (PM)—Munitions tasked by a war plan and designated on the UCML.

Production Superintendent—Senior NCO responsible for squadron maintenance production. Directs the maintenance repair effort.

Programmed Depot Maintenance (PDM)—Inspection requiring skills, equipment, or facilities not normally possessed by operating locations.

Quality Assurance Evaluator (QAE) or Quality Assurance Representative (QAR)—Individual who monitors a contractor on a daily basis and who is involved in every aspect of a contract to ensure the contractor is in compliance with that contract.

Quarterly Evaluation (QE) —Recurring calendar task evaluations required by munitions and weapons personnel.

Quick Reference List (QRL)—Listing of those fast-moving, high use items required for primary mission aircraft. The basic purpose of the QRL is to provide maintenance personnel with a speedy way to

place a demand on the supply system.

Repair Cycle Asset—Any recoverable item with an expendability, recoverability, reparability code (ERRC) category of XD or XF.

Recurring Discrepancy—System or subsystem malfunction that reappears during the third, fourth, or fifth sortie (or attempted sortie) following its first appearance.

Repeat Discrepancy—Malfunction in a system or subsystem that reappears on the next sortie (or attempted sortie) following its first appearance.

Shop Stock—Includes items such as sheet metal, electrical wire, fabric, and metal stock, used and stored within a maintenance workcenter to facilitate maintenance.

Special Certification Roster (SCR)—Management tool that provides supervisors a listing of personnel authorized to perform, evaluate, and inspect critical work.

Supply Point—Forward warehouse located within or near the maintenance workcenter.

Support Munitions (SM)—Munitions which could be used in support of contingency plans, or directives and designated on the UCML.

Allowance Standard (AS)—Authorized document that identifies the amount and type of equipment for an organization.

Tail Number Bins (TNB)—Locations established and controlled to store issued parts awaiting installation and parts removed to "facilitate other maintenance" (FOM). Holding bins are set up by tail number, serial number, or identification number.

Task Assignment List (TAL)—Functional grouping of procedural steps from applicable -16 and -33 series TOs, by crew position, to be accomplished in sequence by each crew member during a loading, or ICT operation.

Technical Administrative Function—Function responsible for ordering and posting regulations, processing all orders, enlisted performance ratings, and general administrative tasks for the section.

Technical Order Distribution Office (TODO)—Function required to maintain records on TOs received and distributed.

Time Compliance Technical Order (TCTO)—Authorized method of directing and providing instructions for modifying equipment, and performing or initially establishing one-time inspections.

Unit Committed Munitions List (UCML)—List of primary, support, and limited-use munitions necessary to meet unit operational/training requirements.

Urgency Justification Code (UJC)—Two-digit code used to reflect the impact and type of need. The urgency of need designator (UND) fills the first position of the UJC. Use of UND 1, A and J is restricted and is verified by designated personnel.

Utilization Rate (UTE Rate)—Average number of sorties or hours flown per aircraft per period.

Weapons Standardization (WS)—Organization comprised of the wing weapons manager, an NCOIC, the LSC, an academic instructor, and lead crews.

Weapons Locally-Manufactured Equipment (LME)—All equipment that measures, tests, or verifies system, subsystem, component, or item integrity. It also includes equipment such as handling dollies,

storage racks (except storage shelves), maintenance stands, or transport adapters. It does not include simple adapter cables and plugs constructed as troubleshooting aids to replace pin-to-pin jumper wires specified in TOs.

Weight and Balance (W&B) Program —Program used in calculating, verifying, updating, and computing weight and balance on a weapon system.

Attachment 2

MAINTENANCE FORMS

The following is a listing of the more commonly used forms in aircraft maintenance.

A2.1. AF Form 537, PME Shipping. This form is used to track precision measurement equipment (PME) items through the supply pipeline.

A2.2. AF Form 596, Quick Engine Change Kit Inventory For ____. Used to inventory QEC Kits on an engine when the engine is received or shipped back for repair.

A2.3. AF Form 726, Transient Aircraft Service Record. Used by transient alerts to log servicing data on transient aircraft.

A2.4. AF Form 861, Base/Transient Job Control Number Register. This form is used to track jobs done on transient aircraft and manhour time accounting.

A2.5. AF Form 864, Daily Requirement and Dispatch Record. Used in the maintenance planning process to identify, dispatch and control the pre-planned use of aerospace ground equipment (AGE) when automated capabilities are not available.

A2.6. AF Form 1492, Warning Tag. Two-part form used by maintenance personnel for two purposes. The top portion of the form serves as a warning indicator alerting personnel to a condition that could cause damage or injury if ignored, and the perforated bottom portion of the tag provides a cross-check with the aircraft forms. This allows visibility of all installed tags in one location.

A2.7. AF Form 2401, Equipment Utilization and Maintenance Schedule. Used in the maintenance planning process to display monthly equipment utilization and maintenance requirements.

A2.8. AF Form 2402, Weekly Equipment Utilization and Maintenance Schedule. Used in the maintenance planning process to display weekly equipment utilization and maintenance requirements.

A2.9. AF Form 2403, Weekly Aircraft Utilization/Maintenance Schedule. Used to publish an aircraft utilization or maintenance schedule.

A2.10. AF Form 2406, Maintenance Pre-Plan. Identifies pre-planned requirements that will be incorporated into the daily maintenance plan. This form is ALLFORMS.

A2.11. AF Form 2407, Weekly/Daily Flying Schedule Coordination. Documents and coordinates changes made to the published aircraft utilization schedule. This form is ALLFORMS.

A2.12. AF Form 2408, Generation Maintenance Plan. Identifies a sequence of actions required for aircraft generation.

A2.13. AF Form 2409, Generation Sequence Action Schedule. Records the accomplishment time of the sequence of actions required for aircraft generation. The form contains the same actions, sequence times, and codes listed on the AF Form 2408.

A2.14. AF Form 2410, Inspection/TCTO Planning Checksheet. Used in the time compliance technical order (TCTO) planning and process for pre-scheduling meetings.

A2.15. AF Form 2413, Supply Control Log. Identifies and monitors aircraft and SE supply requirements.

A2.16. AF Form 2414, Verification Worksheet. Used by maintenance supply liaison to monitor MICAPS.

A2.17. AF Form 2422, Maintenance Analysis Referral. Records identification, investigation, and proposed corrective actions for maintenance management problems.

A2.18. AF Form 2430, Specialist Dispatch Control Log. This form is used to monitor the time technician support was requested and the time a job is completed.

A2.19. AF Form 2431, Aerospace Ground Equipment Status Log. Monitors submissions for technical order improvements or material deficiencies.

A2.20. AF Form 2434, Munitions Configuration and Expenditure Document. Used to track munitions expenditures on a daily basis. Helps reconcile munitions accounts between the flightline and munitions storage area. Also used by armament flights to track rounds fired through guns.

A2.21. AF Form 2436, Weekly/Daily Aircraft Utilization Schedule. Used to schedule and track aircraft tail numbers through the weekly/daily schedule (i.e., wash, P.E., flying time, time change).

A2.22. AF Form 2446, Schedule of Technician Availability. Used to show availability of technicians for the weekly flying period.

A2.23. AF Form 2520, Repair Cycle Control Log. Used to track components through the repair cycle.

Attachment 3

SUPPLY REPORTS AND LISTINGS

A3.1. Repair Cycle Asset Management Listing (D23). This listing is used to monitor repair cycle assets and as a management product to monitor the stock position and repair cycle status of repairable (DIFM) assets. It may be produced in several sequences and is provided to the customer daily. Refer to AFMAN 23-110, volume II, part two, chapter 5.

A3.2. Repairable Support Division.(RSD) Due In From Maintenance (DIFM) Report. Provides senior managers, flight OIC, and flight chiefs information on assets remaining in the repair cycle over a user defined number of days (e.g. 10 days) which are tying up large amounts unit O&M funds (e.g. over \$10,000). This listing allows management to spot check the health of the repair cycle under the RSD concept and is available on request. Use this list to avoid penalty charges for DIFM items in the repair cycle greater than 60 days.

A3.3. AWP Validation Listing (D19). Provides AWP due-outs and corresponding due-in and status details. This information helps determine the status of AWP end items and their corresponding bits and pieces and identifies cross-cannibalization candidates. It is a daily listing and is provided to all workcenters involved with AWP management.

A3.4. MICAP Status Report (R49). This report provides the current status of all active MICAP requirements and provides the data in clear text. Use this product to validate serial numbers of parts required for MICAP end items. In units supported by a base supply using the MICAP Asset Sourcing System (MASS), the E-40 may be used in lieu of the R49.

A3.5. Priority Monitor Report (D18). Use this report to monitor due-outs and their corresponding status. It is provided to organizations having due-outs at a locally determined frequency (i.e. daily for UND A, weekly for UND B).

A3.6. Due-out Validation Listing (M30). Provide the user a list of all outstanding due-outs for their organization as reflected in the supply system. Ensure all due-outs are valid and still required. If changes are required, annotate the listing and return a copy to base supply. The listing is provided monthly.

A3.7. Daily Document Register (D04). The D04 is used to monitor and validate supply transactions which have occurred against a unit's supply account. Review daily for all charges, credits, and other transactions (ISUs, TINs, DORs, etc.) affecting your account.

A3.8. Organizational Bench Stock Listing (S04). This is a listing of all items and quantities authorized on the workcenter bench stock. The listing is provided semiannually or as requested.

A3.9. Bench Stock Review Listing (M04). Listing of recommended additions, changes, and deletions to organizational bench stocks based on consumption patterns. Do not automatically make additions/deletions based on this listing but rather on expected future demands. The M04 is provided monthly.

A3.10. Repair Cycle Data List (Q04). Provides data applicable to each repair cycle item. Data provided includes history of past repair, NRTS, condemn actions, percent of base repair and repair activity. The listing is provided quarterly.

A3.11. Supply Point Listing (Q13). This listing provides all supply point details, with the quantity authorized, on-hand, and due-out for each detail. It also identifies shortages, excesses and shelf-life items. Q13 is provided quarterly or as requested.

A3.12. Special Level Review Listing (R35). Provides information on all items with adjusted stock levels.

A3.13. Organization Effectiveness Report (M24). The M24 reflects the level of supply effectiveness in meeting unit requirements. Percentages of effectiveness in issue/support and bench stock support for the past month are provided. Potential support problems may be indicated by the percentage of support provided in each area. This is a monthly product.

A3.14. Monthly TCTO Reconciliation Listing. This listing provides TCTO kit status and is used to identify or reconcile differences between supply computer records and maintenance TCTO documents. Refer to AFMAN 23-110, volume II, part two, chapter 24. Use monthly to perform this reconciliation.

A3.15. TCTO Status Report (TCS). The TCS is a CAMS background product that identifies serial numbers, TCTO status codes, and kit, part, and tool requirements for equipment requiring modification, as well as a summary of affected equipment by TCTO status codes.

A3.16. Document Validation Report (DVR). Used to validate parts request records by end item serial number (e.g. when performing 14 day records checks).

A3.17. Event List (EVL). This is an on-line CAMS unique inquiry that provides supply document numbers, aircraft discrepancies and equipment ID by event ID.

A3.18. MICAP Record Retrieval/Update (1MM). An on-line SBSS inquiry that lists information on current MICAP conditions by equipment ID.

A3.19. MICAP (NMCS/PMCS) Supply Data Inquiry (NSD). An on-line CAMS inquiry that lists MICAP information by equipment ID.

A3.20. Serial Number Record Inquiry. This on-line SBSS inquiry provides all due-out requirements (MICAPs, deferred discrepancies, etc.) for an equipment ID.

Attachment 4**BASE-LEVEL AUTOMATED MAINTENANCE MANAGEMENT SYSTEMS**

A4.1. Core Automated Maintenance System (CAMS). The Air Force standard, production oriented, base level automated maintenance management system. Detailed CAMS procedures are in AFM 66-279 volumes I through XXVII and TO 00-20-2.

A4.2. Reliability and Maintainability Information System (REMIS). Accumulates data and provides information necessary to support the AF equipment maintenance program at all levels. Consult AFM 66-279 and TO 00-20-2.

A4.3. Precision Measurement Equipment Laboratory (PMEL) Automated Management System (PAMS). Provides inventory management and job data information for PMELs. Refer to AFM 66-303.

A4.4. G081 System. An automated maintenance management system used primarily by Air Mobility Command.

A4.5. Tactical Interim CAMS and REMIS Reporting System (TICARRS). An automated maintenance management system used by F-16, F-15, and F-117 wings.

A4.6. Comprehensive Engine Management System (CEMS). Tracks engine and components, automates the engine manager reporting (D042), and provides reporting for the CEMS central database (D042) at OC-ALC. Refer to AFM 66-279, volumes I and III, and TO 00-25-254-1.

Attachment 5

OPERATIONAL DEFINITIONS FOR QUALITY MAINTENANCE METRICS

METRIC: System Code 3 Status

DESCRIPTION: A percentage based on the total # of system code 3 discrepancies compared to the total # of sorties flown.

PURPOSE: Reduce incidents/occurrences of system code 3 discrepancies.

DESIRED OUTCOME: Increase reliability of aircraft systems thereby improving performance and minimizing risk to personnel and equipment.

LINKAGE: HQ USAF/LG Strategic Plan, goal two; improve readiness and sustainability.

POPULATION: All system code 3 discrepancies by MDS.

FREQUENCY: Monthly at Wing, Quarterly at MAJCOM and Air Staff.

SOURCE: Debriefing data. (CAMS and G081 when available or manually)

OPR: Maintenance Data Systems Analysis

REPORTING LEVELS: Wing, MAJCOM and Air Staff

FORMULAS: System Code 3 percentage equals the total # of System Code 3 discrepancies divided by the total # of Sorties Flown.

$$\text{System Code 3 Percentage} = \frac{\text{Total \# Code 3 discrepancies}}{\text{Total \# Sorties}} \times 100$$

REPORT FORMAT: Report, by MDS, and by each month, the following data for each of the three months in the quarter:

a) Total number of sorties flown.

b) Total number of system code 3 discrepancies.

Example: Wing or MAJCOM, MDS1, Month 1, Year, Total # of Code 3's, Total # of Sorties Flown

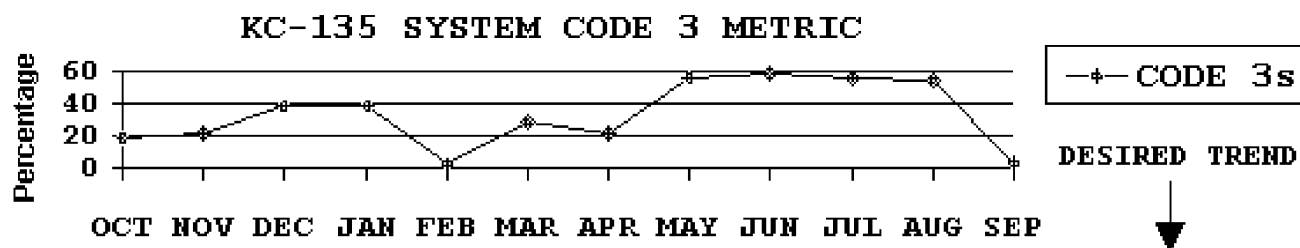
Wing or MAJCOM, MDS1, Month 2, Year, Total # of Code 3's, Total # of Sorties Flown

Wing or MAJCOM, MDS1, Month 3, Year, Total # of Code 3's, Total # of Sorties Flown

Wing or MAJCOM, MDS2, Month 1, Year, Total # of Code 3's, Total # of Sorties Flown etc.

KEY TERMS: System Code 3: System has a major discrepancy in mission essential equipment that requires repair or replacement before further mission assignment.

NOTIONAL GRAPHIC PRESENTATION: Run chart displaying System Code 3 percentage on Y axis and the calendar months of the year on X axis by aircraft MDS.



IMPROVEMENT STRATEGY: Track System Code 3 discrepancy trends to determine root causes and opportunities for improving safety and reliability through quality maintenance processes.

METRIC: Maintenance Related On-duty Ground Mishaps

DESCRIPTION: A percentage based on the total # of Class C maintenance related on-duty ground mishaps compared against the total number of maintenance personnel assigned.

PURPOSE: Reduce incidents/occurrences of maintenance related Class C ground mishaps.

DESIRED OUTCOME: Eliminate harm and minimize risk to personnel and equipment by reducing the number of Class C maintenance related ground mishaps.

LINKAGE: HQ USAF/LG Strategic Plan, goal two; improve readiness and sustainability.

POPULATION: All maintenance related ground mishaps, according to AFI 91-202 and AFI 91-204.

FREQUENCY: Monthly at Wing, Quarterly at MAJCOM and Air Staff.

SOURCE: Wing safety data base

OPR: Wing Safety

REPORTING LEVELS: Wing, MAJCOM and Air Staff

FORMULAS: Maintenance Related Ground Mishap percentage equals the total #of Class C maintenance related on-duty ground mishaps divided by the total #of maintenance personnel assigned at wing level and below.

$$\text{Ground Mishap Status Percentage} = \frac{\text{Total \# Class C ground mishaps}}{\text{Total \# maintenance personnel}} \times 100$$

REPORT FORMAT: Report, by month, the following data for assigned personnel in the AFSC families 2Axxx, 2Pxxx, 2Rxxx, and 2Wxxx for each of the three months in the quarter:

- a) Total number of Class C maintenance related on-duty ground mishaps,
- b) Total number of maintenance personnel assigned (as of the first day of the month)

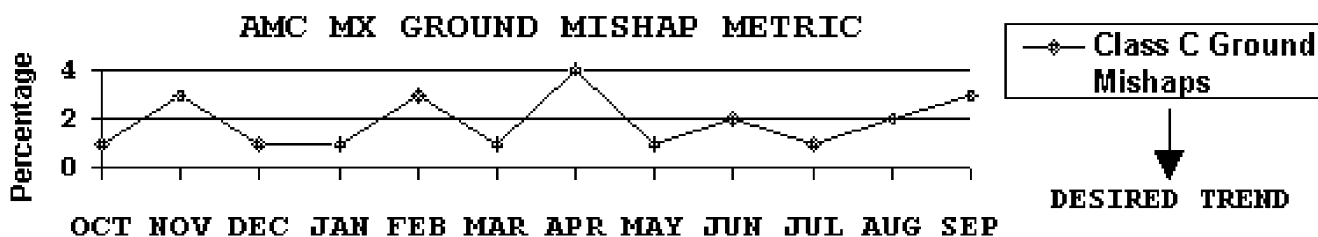
Ex: Wing/MAJCOM, Month 1, Year, total # Class C ground mishaps, total # of maintenance personnel

Wing/MAJCOM, Month 2, Year, total # Class C ground mishaps, total # of maintenance personnel

Wing/MAJCOM, Month 3, Year, total # Class C ground mishaps, total # of maintenance personnel

KEY TERMS: Class C Ground Mishap: As defined in AFI 91-204 and involving maintenance personnel, includes 2Axxx, 2Pxxx, 2Rxxx, and 2Wxxx AFSCs.

NOTIONAL GRAPHIC PRESENTATION: Run chart displaying Class C Maintenance On-duty Ground Mishap percentage on the Y axis and the calendar months of the year on X axis.



IMPROVEMENT STRATEGY: Track maintenance related Class C ground mishaps to determine root causes and opportunities for improving personnel safety through quality maintenance processes.

METRIC: Qualified Personnel

DESCRIPTION: A percentage based on the total # of qualified personnel compared against the total number of maintenance personnel assigned.

PURPOSE: Increase the capability of workforce to improve quality maintenance.

DESIRED OUTCOME: Develop a highly qualified workforce with weapon system specific skills to perform quality maintenance.

LINKAGE: HQ USAF/LG Strategic Plan, goal two; improve readiness and sustainability.

POPULATION: Aircraft maintenance AFSCs 2A, 2P, 2R, and 2W at wing level and below.

FREQUENCY: Monthly at Wing, Quarterly at MAJCOM and Air Staff.

SOURCE: CAMS and G081 Personnel and Training Subsystems.

OPR: Programs and Mobility and Maintenance Training.

REPORTING LEVELS: Wing, MAJCOM and Air Staff.

FORMULAS: Total number qualified personnel divided by the total # of maintenance personnel assigned.

$$\text{Percentage Qualified Personnel (By AFSC \& Skill Level)} = \frac{\text{Total \# Qualified Personnel (By AFSC \& Skill Level)}}{\text{Total \# Assigned Personnel (By AFSC \& Skill Level)}} \times 100$$

REPORT FORMAT: Report, by month, the following data for assigned personnel in the AFSC families 2Axxx, 2Pxxx, 2Rxxx, and 2Wxxx for each of the three months in the quarter:

- a) Total number of personnel qualified in each of the four skill levels for each AFSC.

b) Total number of maintenance personnel assigned in each of the skill levels for each AFSC

Examples: Wing/MAJCOM, 2Axxx, Month 1, Year, total # of qualified at skill level 3, total # eligible at skill level 3, Total # qualified at skill level 5, total # eligible at skill level 5, total # qualified at skill level 7, Total # eligible at skill level 7, total # qualified at skill level 9, total # eligible at skill level 9.

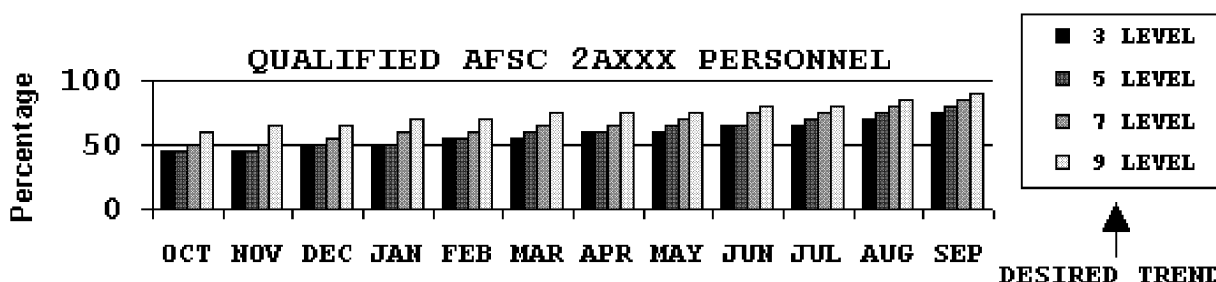
Wing/MAJCOM, 2Axx, Month 2, Year, total # of qualified at skill level 3, total #eligible at skill level 3...

Wing/MAJCOM, 2Axx Month 3, Year, total # of qualified at skill level 3, total #eligible at skill level 3...

Wing/MAJCOM, 2Pxx, Month 1, Year, total # of qualified at skill level 3, total #eligible at skill level 3...

KEY TERMS: Qualified: Duty position qualified as required in the Career Field Education and Training Plan (including MAJCOM supplements) and awarded weapon system SEI.

NOTIONAL GRAPHIC PRESENTATION: Bar chart displaying the percentage of qualified personnel on the Y axis and the calendar months of the year on X axis by AFSC.



IMPROVEMENT STRATEGY: Develop a tracking capability which provides insight on workforce skills to effectively manage and improve maintenance capability.

METRIC: Aircraft Forms Status

DESCRIPTION: A percentage based on the total # of times aircraft AFTO Forms 781A *aircraft status* match command post/MIS status compared to the number of times sampled.

PURPOSE: Improve the accuracy of aircraft status reporting.

DESIRED OUTCOME: Reduce conflicting aircraft status reporting among operations and maintenance users.

LINKAGE: HQ USAF/LG Strategic Plan, goal two; improve readiness and sustainability.

METHOD OF COLLECTION: Randomly sampled, measured monthly.

FREQUENCY: Monthly at Wing.

SOURCE: Sampling data from AFTO Forms 781A and CAMS or G081.

OPR: Quality Assurance (QA).

REPORTING LEVELS: Wing.

FORMULAS: Aircraft Forms Status percentage equals the # of accurate status's divided by the # of times sampled.

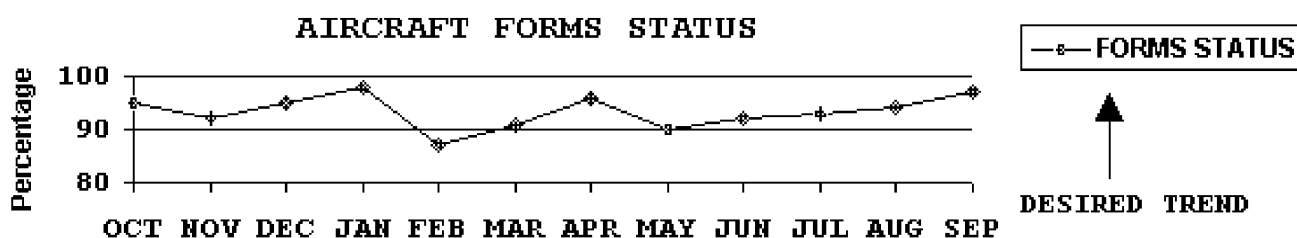
$$\text{Aircraft Forms Status Percentage} = \frac{\text{Total \# Accurate Status's}}{\text{Total \# Status's Sampled}} \times 100$$

REPORT FORMAT: Collect and track by month, the following:

- Total number of accurate status's among those sampled
- Total number of status samples taken

KEY TERMS: A sample equals one comparison of aircraft status, as indicated in the AFTO Forms 781A to one reported status in CAMS or G081.

NOTIONAL GRAPHIC PRESENTATION: Run chart displaying aircraft status accuracy percentage on the Y axis, and the calendar months of the year on X axis.



IMPROVEMENT STRATEGY: Analyze discrepancies in aircraft status reporting, determine root causes and improve reporting processes.

METRIC: Scheduling Effectiveness

DESCRIPTIONS: MAINTENANCE FLYING SCHEDULE EFFECTIVENESS: A percentage based on the total # of sorties scheduled on the daily flying schedule minus maintenance related deviations compared to the total number of sorties scheduled on the daily flying schedule.

MAINTENANCE PLAN SCHEDULING EFFECTIVENESS: A percentage of the weighted events started as scheduled compared to the number of weighted events scheduled according to AFI 21-103 and MAJCOM supplements.

PURPOSE: Improve utilization of resources.

DESIRED OUTCOME: Reduce incidence of maintenance related deviations to the flying schedule.

LINKAGE: HQ USAF/LG Strategic Plan, goal two; improve readiness and sustainability.

POPULATION: All daily scheduled flying events and Monthly Maintenance Plan scheduled events.

FREQUENCY: Monthly at Wing, Quarterly at MAJCOM and Air Staff.

OPR: PS & D

REPORTING LEVELS: Wing, MAJCOM and Air Staff

FORMULAS: Maintenance Flying Scheduling Effectiveness (MFSE) equals the #of sorties scheduled on the daily flying schedule minus maintenance deviations divided by the total # of sorties scheduled on the daily flying schedule.

$$\text{MFSE} = \frac{\text{Total \# Sorties scheduled minus maintenance deviations}}{\text{Total \# Sorties scheduled}} \times 100$$

Maintenance Plan Scheduling Effectiveness (MPSE) equals the sum of weighted factors times the number of events started as scheduled divided by the sum of weighted factors times number of events scheduled.

$$\text{MPSE} = \frac{(\text{Wt Ev 1}) \times (\# \text{ Ev 1 Started on Sched}) + (\text{Wt Ev 2}) \times (\# \text{ Ev 2 Started on Sched}) + \dots}{(\text{Wt Ev 1}) \times (\# \text{ Ev 1 Scheduled}) + (\text{Wt Ev 2}) \times (\# \text{ Ev 2 Scheduled}) + \dots} \times 100$$

REPORT FORMAT: Report, by MDS and by month, the following data for each of the three months in the quarter:

a) Total number of sorties scheduled on daily flying schedule during the month

b) Total number of scheduled sorties that experienced maintenance related deviations

Ex: MAJCOM, MDS1, Month1, Year, # sorties scheduled, # sorties with mx related deviations

MAJCOM, MDS1, Month2, Year, # sorties scheduled, # sorties with mx related deviations

MAJCOM, MDS1, Month3, Year, # sorties scheduled, # sorties with mx related deviations

MAJCOM, MDS2, Month1, Year, # sorties scheduled, # sorties with mx related deviations etc.

c) Weighted sum of scheduled maintenance events (e.g., for 7 events of weight 6, 5 events of weight 5, and 3 events of weight 2, report 73 {7x6 + 5x5 + 3x2 = 42 + 25 + 6 = 73})

d) Weighted sum of scheduled maintenance events started as scheduled (e.g., for 5 events of weight 6, 4 events of weight 5, and 3 events of weight 2, report 56 {5x6 + 4x5 + 3x2 = 30 + 20 + 6 = 56})

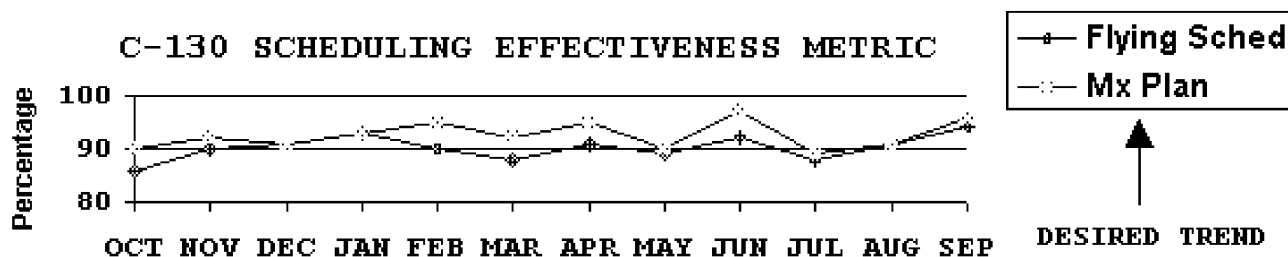
Ex: Wing/MAJCOM, MDS1, Month1, Year, weighted sum of scheduled maintenance events, weighted sum of scheduled maintenance events which were started as scheduled.

Wing/MAJCOM, MDS1, Month2, Year, weighted sum of scheduled maintenance events, weighted sum of scheduled maintenance events which were started as scheduled.

Wing/MAJCOM, MDS1, Month3, Year, weighted sum of scheduled maintenance events, weighted sum of scheduled maintenance events which were started as scheduled.

Wing/MAJCOM, MDS2, Month1, Year, weighted sum of scheduled maintenance events, weighted sum of scheduled maintenance events which were started as scheduled etc.

NOTIONAL GRAPHIC PRESENTATION: Run chart displaying Maintenance Flying Scheduling Effectiveness and Maintenance Plan Scheduling Effectiveness on the Y axis is and calendar months of year on X axis.



IMPROVEMENT STRATEGY: Track scheduling deviations to determine root causes and opportunities for improving utilization within quality maintenance processes.

METRIC: Maintenance Related Inflight Emergency (IFE)

DESCRIPTION: A percentage based on the total # of times an aircrew declares an IFE that is maintenance related compared to the total number of sorties flown.

PURPOSE: Reduce IFEs due to maintenance.

DESIRED OUTCOME: Improve equipment performance and minimize risk to personnel and equipment by reducing the number of IFEs attributable to maintenance.

LINKAGE: HQ USAF/LG Strategic Plan, goal two; improve readiness and sustainability.

POPULATION: All maintenance related IFEs by aircraft MDS and MAJCOM.

FREQUENCY: Monthly at Wing, Quarterly at MAJCOM and Air Staff.

SOURCE: Debriefing data (CAMS and G081 when available; or manually)

OPR: Maintenance Data Systems Analysis

REPORTING LEVELS: Wing, MAJCOM and Air Staff

FORMULAS: Maintenance IFE percentage equals total # of maintenance related IFEs divided by total # of sorties flown.

$$\text{Maintenance IFE Percentage} = \frac{\text{Total \# maintenance IFEs}}{\text{Total \# Sorties flown}} \times 100$$

REPORT FORMAT: Report, by MDS and by month, the following data for each of the three months in the quarter.

a) Total number of maintenance related IFEs.

b) Total number of sorties flown.

The data should be reported as follows:

Wing/MAJCOM, MDS 1, Month 1, Year, Total # maintenance related IFEs, Total # of sorties flown.

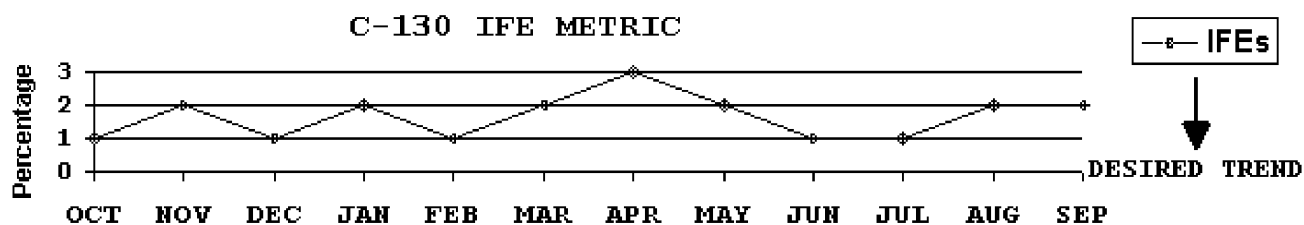
Wing/MAJCOM, MDS 1, Month 2, Year, Total # maintenance related IFEs, Total # of sorties flown.

Wing/MAJCOM, MDS 1, Month 3, Year, Total # maintenance related IFEs, Total # of sorties flown.

Wing/MAJCOM, MDS 2, Month 1, Year, Total # maintenance related IFEs, Total # of sorties flown, etc.

KEY TERMS: Maintenance Related IFE: An event when an airborne aircraft encounters a maintenance related situation or emergency that results in an IFE being declared by the aircrew. The cause of the IFE is traceable to a maintenance action or equipment failure.

NOTIONAL GRAPHIC PRESENTATION: Run chart displaying Maintenance Related IFE percentage on the Y axis and the calendar months of the year on X axis.



IMPROVEMENT STRATEGY: Track Maintenance Related IFE trends to determine root maintenance causes and opportunities for improving safety through quality maintenance processes.

METRIC: Aircraft Mission Supportability

DESCRIPTION: A percentage based on the total # of possessed aircraft capable of accomplishing a specific basic systems list (BSL) mission compared to the total number of possessed aircraft assigned that BSL.

PURPOSE: Increase the number of aircraft available to accomplish any assigned mission.

DESIRED OUTCOME: Provide the highest quality aircraft when needed. Increase the probability that each aircraft can accomplish its assigned missions.

LINKAGE: HQ USAF/LG Strategic Plan, goal two; improve readiness and sustainability.

POPULATION: All possessed aircraft by MDS and BSLs according to AFI 21-103 and MAJCOM supplements.

FREQUENCY: Measured daily, averaged monthly. Reported monthly at Wing, Quarterly at MAJCOM and Air Staff.

SOURCE: Maintenance Management Information Systems such as CAMS, G081 and IMDS. Functional User requirements for an automated capability to report multiple mission supportability needs to be developed through these systems. A data base is currently under development by AFLMA and will be pro-

vided to MAJCOMs for use in reporting this metric. (Note: Data is not reportable until this data base is developed and distributed to MAJCOMs.)

OPR: Command Post/Maintenance Coordination Function

REPORTING LEVELS: Wing, MAJCOM and Air Staff

FORMULAS: Aircraft Mission Supportability percentage equals the average daily total # of possessed aircraft capable of performing each BSL mission divided by the average daily total # of possessed aircraft assigned that BSL mission.

$$\text{Aircraft Mission Supportability Percentage} = \frac{\text{Total \# aircraft capable of performing each BSL}}{\text{Total \# possessed aircraft tasked for each BSL}} \times 100$$

REPORT FORMAT: Report, by MDS, by each assigned BSL for that MDS, and by month, the following data for each of the three months in the quarter.

- a) Average daily total number of possessed aircraft assigned each BSL.
- b) Average daily total number of possessed aircraft capable of performing each assigned BSL.

The data should be reported as follows:

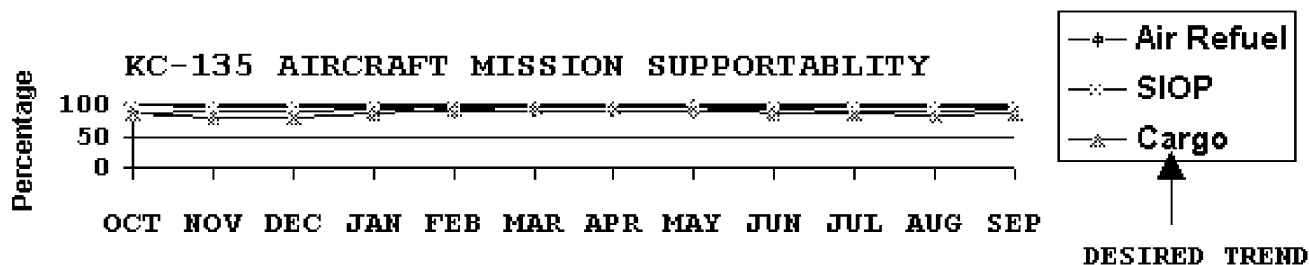
Wing/MAJCOM, MDS 1, BSL 1, Month 1, Year, Average daily total # aircraft BSL1 capable, Average daily total # of possessed MDS1 aircraft tasked for BSL1.

Wing/MAJCOM, MDS 1, BSL 2, Month 1, Year, Average daily total # aircraft BSL2 capable, Average daily total # of possessed MDS1 aircraft tasked for BSL2.

Wing/MAJCOM, MDS 1, BSL 3, Month 1, Year, Average daily total # aircraft BSL3 capable, Average daily total # of possessed MDS1 aircraft tasked for BSL3.

Wing/MAJCOM, MDS 2, BSL 1, Month 1, Year, Average daily total # aircraft BSL1 capable, Average daily total # of possessed MDS2 aircraft tasked for BSL1.

NOTIONAL GRAPHIC PRESENTATION: Run chart displaying aircraft mission supportability percentage on the Y axis is and the calendar months of year on X axis.



IMPROVEMENT STRATEGY: Track aircraft mission supportability percentage to determine root causes and opportunities for improving aircraft capability to perform all mission requirements through quality maintenance.

METRIC: Adherence to Directives

DESCRIPTION: A percentage based on the total # of passed assessments that follow maintenance policy, guidance, or technical data compared to the total number of assessments.

PURPOSE: Improve adherence to policy, guidance and technical data.

DESIRED OUTCOME: Eliminate deviations from prescribed directives to achieve the highest quality maintenance.

LINKAGE: HQ USAF/LG Strategic Plan, goal two; improve readiness and sustainability.

POPULATION: All measured maintenance assessments.

FREQUENCY: Monthly at Wing.

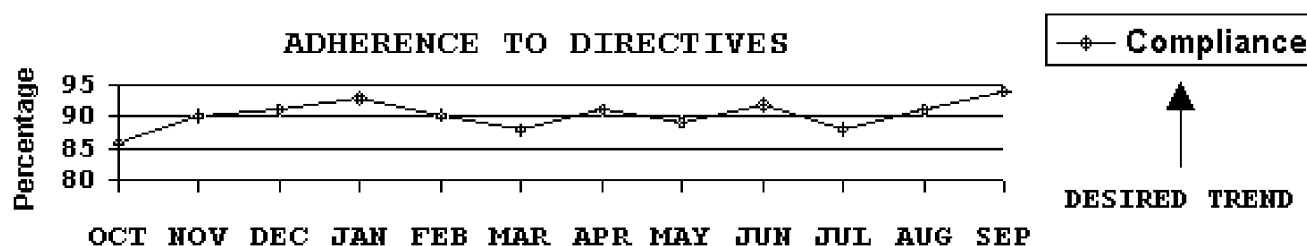
SOURCE: Maintenance process assessment/evaluation forms or assessment data base.

OPR: Quality Assurance (QA)

REPORTING LEVELS: Wing.

$$\text{Adherence to Directives Percentage} = \frac{\text{Total \# passed assessments}}{\text{Total \# assessments}} \times 100$$

NOTIONAL GRAPHIC PRESENTATION: Run chart displaying the compliance rate on the Y axis and the calendar months of the year on the X axis.



IMPROVEMENT STRATEGY: Analyze trends of failure to adhere to policy, guidance and technical data to eliminate deviations and improve the quality of maintenance.

Attachment 6**IC 97-1 TO AFI 21-101**

7 July 1997

**IC 97-1 TO AFI 21-101, MAINTENANCE MANAGEMENT OF AIRCRAFT
DISTRIBUTION MANAGEMENT 1 OCTOBER 1996****SUMMARY OF REVISIONS**

This interim change (IC) 97-1 provides guidance for assigning aircraft maintenance production inspectors.

3.6.3 Production Inspectors.

3.6.3.1. Maintenance Supervisors/Superintendents and/or Squadron Maintenance Officers/Superintendents approve primary AFSC production inspectors based on their experience and technical expertise regardless of their assigned skill position. Authorize only NCOs with a 7-skill level or higher as production inspectors. Seven skill level personnel may be production inspectors outside their primary AFSC only when specific CUT task qualification is documented in personnel training records.

3.6.3.2. Squadron commanders can authorized selected 5-skill level personnel, in the rank of SrA or higher, to serve as production inspectors waiving the 7-skill level requirement to facilitate the production effort. Waived 5-skill level personnel should be closely monitored and kept to the minimum required to accomplish the maintenance mission.

3.6.3.3. MAJCOMs are authorized to grant group commanders the authority to approve a limited number of selected 5-skill level personnel, in any rank, to serve as production inspectors for specific high volume maintenance tasks. All available training on these specific tasks must be satisfactorily completed prior to the individual's selection. This special authorization will only be granted when a critical shortage of qualified personnel exist.

Attachment 7**IC 98-1 TO AFI 21-101, MAINTENANCE MANAGEMENT OF AIRCRAFT**

6 OCTOBER 1998

SUMMARY OF REVISIONS

This interim change (IC) 98-1 modifies the Flying Crew Chief (FCC) Program and replaces paragraph 3.2. and all subparagraphs.

3.2. Flying Crew Chief (FCC) program.

3.2.1. Maintainers who are required to regularly fly and maintain their aircraft are called “Flying Crew Chiefs” and may qualify for Special Duty Assignment Pay (SDAP). The objective of the FCC program is to:

3.2.1.1. Provide qualified maintenance support for aircraft at locations other than home station.

3.2.1.2. Reimburse maintenance personnel for the added burden of maintaining special qualifications and performing regular aerial flight.

3.2.2. The FCC program only applies to maintenance personnel directed to fly regularly as a result of:

3.2.2.1. Department of Defense, Air Force, MAJCOM, or other higher authority written policies directing FCCs to accompany their aircraft for mission accomplishment.

3.2.2.2. Technical Order (T.O.) directed in-flight maintenance (e.g. helicopter functional check flights).

3.2.3. The following situations would not qualify the FCC for SDAP.

3.2.3.1. Occasional flights where the aircraft is used as transportation in lieu of commercial air.

3.2.3.2. Incentive or indoctrination flights.

3.2.3.3. Deployments where additional maintenance personnel are required at the designated location to supplement assigned maintainers.

3.2.4. Qualifying missions.

3.2.4.1. A mission consists of one or more sorties with a mission number as entered on the AFTO Form 781 or equivalent.

3.2.4.2. For a mission to meet the intent of this program, the mission must meet the criteria in either paragraph [3.2.4.2.1.](#) or [3.2.4.2.2.](#)

3.2.4.2.1. A qualifying mission is one where the FCC is required to accomplish maintenance (servicing, maintenance, or inspection) at locations other than home station so the aircraft is prepared for its next departure. The mission must also be one where FCCs are required to fly by higher authority written policies (e.g. special airlift missions, alert missions, special operations, etc.).

3.2.4.2.2. A qualifying mission is one where FCCs are required by technical order to perform in-flight maintenance (e.g. helicopter functional check flights (FCFs)).

3.2.5. FCC responsibilities.

3.2.5.1. HQ USAF/DPRS oversees the overall SDAP program and provides program guidance in AFI 36-3017, *Special Duty Assignment Pay*. DPRS programs and budgets for SDAP based on inputs from HQ USAF/ILMM.

3.2.5.2. HQ USAF/ILMM is the SDAP functional manager for FCCs. ILMM sets criteria for FCCs, validates MAJCOM FCC reports, and forecasts FCC SDAP budget needs. ILMM approves/disapproves FCC position increases/decreases in coordination with DPRS.

3.2.5.3. MAJCOM headquarters implements the FCC program, appoints a program manager to enforce standards, and prepares the annual report. MAJCOM program managers assign FCC SDAP positions with an AFSC prefix of "C" and an appropriate special experience identifier (SEI) on command manpower documents; and set additional qualification standards for their FCCs as needed.

3.2.5.4. Squadron commanders:

3.2.5.4.1. Control their squadron FCC program as prescribed in AFI 36-3017, AFMAN 36-2108, and this instruction.

3.2.5.4.2. Ensure FCCs fly only when needed for the mission

3.2.5.4.3. Appoint and remove FCCs. Select individuals in maintenance AFSCs outlined in AFMAN 36-2108.

3.2.5.4.4. Ensure only qualified FCCs who meet minimum requirements receive SDAP. FCCs must fly a minimum of three qualifying missions per quarter

3.2.5.4.5. Normally, assign no more than two FCCs per aircraft to each qualifying mission unless approved by MAJCOM LG. Exception: squadron commander may assign the minimum number of additional FCCs when required to maintain proper work-rest cycles or meet T.O. requirements.

3.2.5.4.6. Appoint a unit program manager.

3.2.5.5. Unit program managers:

3.2.5.5.1. Perform FCC program administrative duties.

3.2.5.5.2. Track status and prepare unit report.

3.2.5.5.3. Process paperwork identifying FCC personnel to be awarded a "C" prefix as prescribed in AFI 36-3017. Ensure personnel possess the appropriate SEI for their MDS aircraft.

3.2.5.6. En route supervisors:

3.2.5.6.1. Will not assign FCCs to work other en route aircraft.

3.2.5.6.2. Will brief FCCs on local safety precautions, maintenance practices, and limitations.

3.2.5.6.3. Coordinate with the FCC and aircraft commander on a work/rest plan and transportation to quarters.

3.2.5.7. Aircraft commanders (AC):

3.2.5.7.1. Establish with the FCC and enroute/transient supervisor a work/rest plan based on maintenance and mission requirements. The AC will be the primary decision authority to determine when the FCC begins a rest cycle for the next mission.

3.2.5.7.2. Arrange quarters with the crew and inform the FCC of billeting location.

3.2.6. FCC qualifications.

3.2.6.1. Primary FCC:

3.2.6.1.1. Is normally a staff or technical sergeant 5- or 7-level. Qualified technicians of higher rank are eligible. The group commander may appoint SrA technicians in exceptional cases.

3.2.6.1.2. Is more highly qualified than others in their field, exceptionally responsible, and possess the necessary special qualifications. As a minimum, the primary FCC must be qualified and certified on the following MDS applicable items:

3.2.6.1.2.1. The special experience identifier (SEI) for the aircraft assigned to as a FCC.

3.2.6.1.2.2. Refuel/defuel member and supervisor; concurrent servicing supervisor (as applicable).

3.2.6.1.2.3. Tow member, tow supervisor, tow brake operator, and tow vehicle operator.

3.2.6.1.2.4. Liquid/gaseous oxygen servicing, nitrogen and tire servicing.

3.2.6.1.2.5. Tire and brake change; launch; recovery; marshalling; preflight, thru-flight and postflight inspection.

3.2.6.1.2.6. Auxiliary power unit/gas turbine compressor/air turbine motor operation/quick air start system.

3.2.6.1.2.7. Engine run.

3.2.6.1.2.8. Kneeling operation and cargo door/ramp/visor operation on applicable MDS.

3.2.6.1.2.9. Clear Red X discrepancies, perform IPIs, clear repeat/recurring discrepancies, clear could not duplicate discrepancies.

3.2.6.1.2.10. All applicable powered/nonpowered aerospace ground equipment.

3.2.6.1.2.11. Is well-qualified to operate, troubleshoot, service, and perform maintenance on their aircraft's critical systems as required by the MAJCOM.

3.2.6.2. Assistant FCC qualifications:

3.2.6.2.1. May be a 5 level A1C or above with at least a SEI on their assigned aircraft, and must accompany a fully qualified FCC.

3.2.6.2.2. As a minimum, the assistant FCC will be qualified and certified on the following MDS applicable items:

3.2.6.2.2.1. Refuel/defuel member.

3.2.6.2.2.2. Tow member, tow brake operator, and tow vehicle operator.

3.2.6.2.2.3. Liquid/gaseous oxygen servicing, nitrogen and tire servicing.

3.2.6.2.2.4. Tire and brake change; launch; recovery; marshalling; pre-flight, thru-flight and postflight inspection.

3.2.6.2.2.5. Auxiliary power unit/gas turbine compressor/air turbine motor operation/quick air start system.

3.2.6.2.2.6. Cargo door/ramp/visor operation on applicable MDS.

3.2.6.2.2.7. All applicable powered/nonpowered aerospace ground equipment.

3.2.7. Work/rest plan:

3.2.7.1. The FCC duty period starts when the FCC shows at the aircraft prior to departure.

3.2.7.2. Flying time is considered duty time.

3.2.7.3. Rest is defined as the condition which allows an individual the opportunity for a minimum of 8 hours uninterrupted sleep in every 24 hours. Any interruptions must be made under the most exceptional circumstances.

3.2.7.4. Maximum shifts under normal conditions are 12 hours, but may be extended for mission requirements. The AC is the decision authority for extended shifts.

3.2.8. Program reporting. Units report annually the status of SDAP for flying crew chiefs to the MAJCOM by 15 July. MAJCOMs forward their yearly report to USAF/ILMM by 15 August. Use previous FY 4th quarter; and current FY 1st, 2nd, and 3rd quarters. Reports will include the following information by unit designation:

3.2.8.1. Number of C-coded FCC positions on the unit manning document entitled to be filled. (include approved changes: losses/increases).

3.2.8.2. Number of people filling C-coded positions. Normally this number will equal the number from para [3.2.8.1](#).

3.2.8.3. Number of qualifying missions flown per quarter by C-coded crew chiefs. Include the number of T.O. directed flights.

3.2.8.4. For T.O. directed flights only. Number of T.O. directed missions per quarter that required FCCs. Both the FCC missions and FCF missions warrant special duty pay or hazardous duty pay, but not both. Both are therefore counted under the predominate mission requirement.

3.2.8.5. Number of qualifying missions flown per quarter by personnel without the C prefix. Include T.O. directed missions flown by non-C prefix personnel.

3.2.8.6. Waiver renewals: submit a brief justification for waivers requiring renewal.

3.2.8.7. Unit and MAJCOM remarks and overall program assessment (include remarks to justify vacant positions.)

3.2.9. Waivers.

3.2.9.1. Forward unit waiver requests to the MAJCOM FCC program manager who will either disapprove/return to unit, or approve/forward to AF/ILMM.

3.2.9.2. All approved waivers are reviewed annually as part of the annual report unless otherwise stipulated by the approval authority

Attachment 8**IC 2000-1 TO AFI 21-101, MAINTENANCE MANAGEMENT OF AIRCRAFT**

30 OCTOBER 2000

SUMMARY OF REVISIONS

This revision incorporates IC 2000-1. This change adds the following paragraphs to AFI 21-101 to establish policy for maintenance AFSC special experience identifier (SEI) codes. The goal is to improve identification of experienced maintenance personnel, deployment/assignment equity, and maintenance capability. A “|” indicates revised material since the last edition.

1.11.3. Special experience identifier (SEI) policy (not applicable to ANG/AFRC).

1.11.3.1. Special experience identifiers are designed to identify personnel with special experience and rapidly identify maintenance resources to meet management objectives.

1.11.3.2. The purpose of this policy is to improve the identification of experienced personnel, deployment/assignment equity, and maintenance capability.

1.11.3.3. The objectives of this policy are to:

1.11.3.3.1. Measure unit and MAJCOM experience levels, and support appropriate management action to increase experience levels where needed.

1.11.3.3.2. Ensure maintenance personnel who have relevant hands-on experience on aircraft and engines are awarded all appropriate SEIs.

1.11.3.3.3. Ensure all aircraft maintenance personnel are rotated to SEI coded duty positions where relevant hands-on experience can be acquired within 36 months of date arrived station.

1.11.3.4. OPRs: HQ USAF OPR is AF/ILMM. The maintenance staff is functional OPR at the MAJCOM level. Maintenance supervision is the unit focal point for SEI management.

1.11.3.5. Utilization and training workshops (U&TW): aircraft maintenance career field managers and MAJCOM functional managers will review SEIs in AFMAN 36-2108 for accuracy during U&TWs on maintenance AFSCs.

1.11.3.6. Responsibilities:

1.11.3.6.1. MAJCOM:

1.11.3.6.1.1. Monitor the status of experience levels at each base/unit via analysis of the numbers of personnel possessing special experience identifiers (SEIs) versus the total number of personnel assigned within the AFSC/program element code (PEC).

1.11.3.6.1.2. Identify, by name, those individuals assigned to a base/unit with more than 36 months TOS and not awarded an SEI applicable to that base/unit. Provide this list to the applicable group commander(s)/maintenance supervisor(s)/superintendent(s) for analysis/investigation.

1.11.3.6.1.3. Ensure positions are coded (at MAJCOM or base level), IAW paragraph **1.11.3.8**. Monitor the coding of positions. A recommended measurement is the total number of UMD positions vs. the number of SEI coded positions in a given AFSC.

1.11.3.6.2. Group commander:

1.11.3.6.2.1. Monitor the group experience levels as indicated by the number of assigned personnel with SEIs awarded versus the total number of personnel assigned within the AFSC/PEC.

1.11.3.6.2.2. Investigate and implement corrective actions when individuals with more than 24 months TOS have not been awarded a SEI applicable to the wing of assignment.

1.11.3.6.2.3. Provide to the MAJCOM OPR, the reason(s) why any assigned personnel with more than 36 months TOS has not been awarded an SEI resulting from assignment to a wing position coded IAW AFI 21-101 policy. Provide the proposed date each of these individuals is anticipated to be awarded the applicable SEI.

1.11.3.6.3. Unit commander/maintenance supervision:

1.11.3.6.3.1. Assign personnel to authorized positions consistent with requirements, individuals grade, and skill level.

1.11.3.6.3.2. Ensure previously awarded SEIs are re-designated to newly awarded AFSCs during personnel upgrade actions.

1.11.3.6.3.3. Ensure individuals are awarded the assigned weapons systems SEI to an awarded AFSC when SEI awarding criteria contained in AFMAN 36-2108 has been met.

1.11.3.6.3.4. For multiple mission design series (MDS) units, initiate action to award additional relevant SEIs if/when an individual gains experience on additional MDS'. Award additional SEIs using AF Form 2096, *Classification/On the Job Training Action*, or P-series orders.

1.11.3.6.3.5. Ensure that those personnel with 18-24 months TOS, without an SEI applicable to the unit of assignment, and assigned to positions not coded with an airframe, engine, or sub-system SEI are rotated into positions where an applicable SEI will be earned and awarded.

1.11.3.7. Reporting procedures: MAJCOMs will provide a semi-annual report to HQ USAF/ILMM on/about 1 April and 1 Oct summarizing the MAJCOM experience levels in each of the target AFSCs IAW specified reporting criteria. Reports (RCS: HAF-ILM (SA) 0010) will portray:

1.11.3.7.1. The total number of personnel by CAFSC who have been assigned to a SEI coded or uncoded position with TOS of 18-24, 25-36, and more than 36 months who do not have a unit relevant SEI awarded to any AFSC. Information will be reported IAW the format contained at the HQ USAF/ILMM Aircraft Maintenance website URL: <http://www.il.hq.af.mil/ilm/ilmm/acmaint/index.html>. In addition, provide specific reasons/logic for each individual without a SEI awarded and greater than 36 months TOS.

1.11.3.7.2. The total number of personnel assigned (SEI target AFSCs) vs. the number of personnel assigned (CAFSC) who possess a wing relevant SEI on any awarded AFSC. Information will be reported IAW the format contained at the HQ USAF/ILMM Aircraft Maintenance website URL: <http://www.il.hq.af.mil/ilm/ilmm/acmaint/index.html>.

1.11.3.8. Code unit manning document (UMD) positions in the following manner:

1.11.3.8.1. All positions where relevant, direct hands-on maintenance experience can be gained will be coded.

1.11.3.8.2. Do not code MCC, Toolroom, Safety, Vehicle NCOs, Quality Assurance, Instructor, Quality, or other staff/support functions with weapon system or engine SEIs.

1.11.3.8.3. MAJCOMs will ensure that only those positions where relevant hands-on aircraft/engine experience can be gained are coded with the weapons system/engine specific SEI based upon the following guidelines.

1.11.3.8.3.1. Code positions with the weapons system SEI: 2A0X1A/B, 2A1X4, 2A3X1X, 2A3X2, 2A3X3X, 2A4X1/X2, 2A5X1X/X2/X3X, and 2A6X3/X4/X6, 2W1X1 (including armament backshops).

1.11.3.8.3.2. Code positions with weapons systems/avionics systems as determined by the lead command for MAF/CAF, HQ AFSOC or HQ AIA: 2A1X1, 2A1X7.

1.11.3.8.3.3. Code positions with engine SEI where personnel can receive hands-on engine experience (flightline, JEIM, and test cell): 2A6X1A/B.

1.11.3.8.3.4. Code positions with either weapons system or low observable SEI: 2A7X3.

1.11.3.8.3.5. Electro-environmental (2A6X6) and Hydraulics (2A6X5) backshop positions will not be coded with SEIs unless the personnel are normally dispatched from the shop to work aircraft.

1.11.3.8.3.6. A/R shops will be coded with the A/R SEI.

1.11.3.8.3.7. For units having positions on their UMD funded by another MAJCOM under a host/tenant or memorandum of agreement, the positions will be coded with the coordination/ approval of the funding MAJCOM.

1.11.3.8.4. MAJCOMs may code additional positions with appropriate SEIs with the concurrence of the MAJCOM functional manager.

1.11.3.9. Triggers: the trigger point is the point where MAJCOMs must review unit experience/manning levels for further action. MAJCOMs may develop their own trigger point, with justification, based on total number of personnel assigned in the AFSC vs. the number of personnel holding a wing applicable awarded SEI. As a minimum, the experience baseline will be 60%. If experience levels in a specific AFSC fall below this point, MAJCOMs should consider steps to help alleviate the situation. These may include TDY manning assistance, assignment availability codes, using SEIs in the overseas selection/returnee allocations cycle, when available, to direct people with the required SEI into a particular location or command leveling using skill level, SEI, and time on station as the assignment selection criteria. Any request for assistance to AFPC will be accompanied by justification to include total personnel assigned in the AFSC, number of personnel in the wing holding an awarded, relevant SEI and the number of personnel with greater than 36 months time on station without an award of an SEI. Units with personnel on station longer than 36 months with no SEI awarded will have difficulty justifying their need for assistance. Note: this trigger point does not affect or prevent SEI selection rates approved by MAJCOMs/AFPC through normal channels.